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THEORY OF ALGEBRA

BY

JOHN

JOHN STUART MILL

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ALGEBRA

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ALGEBRA

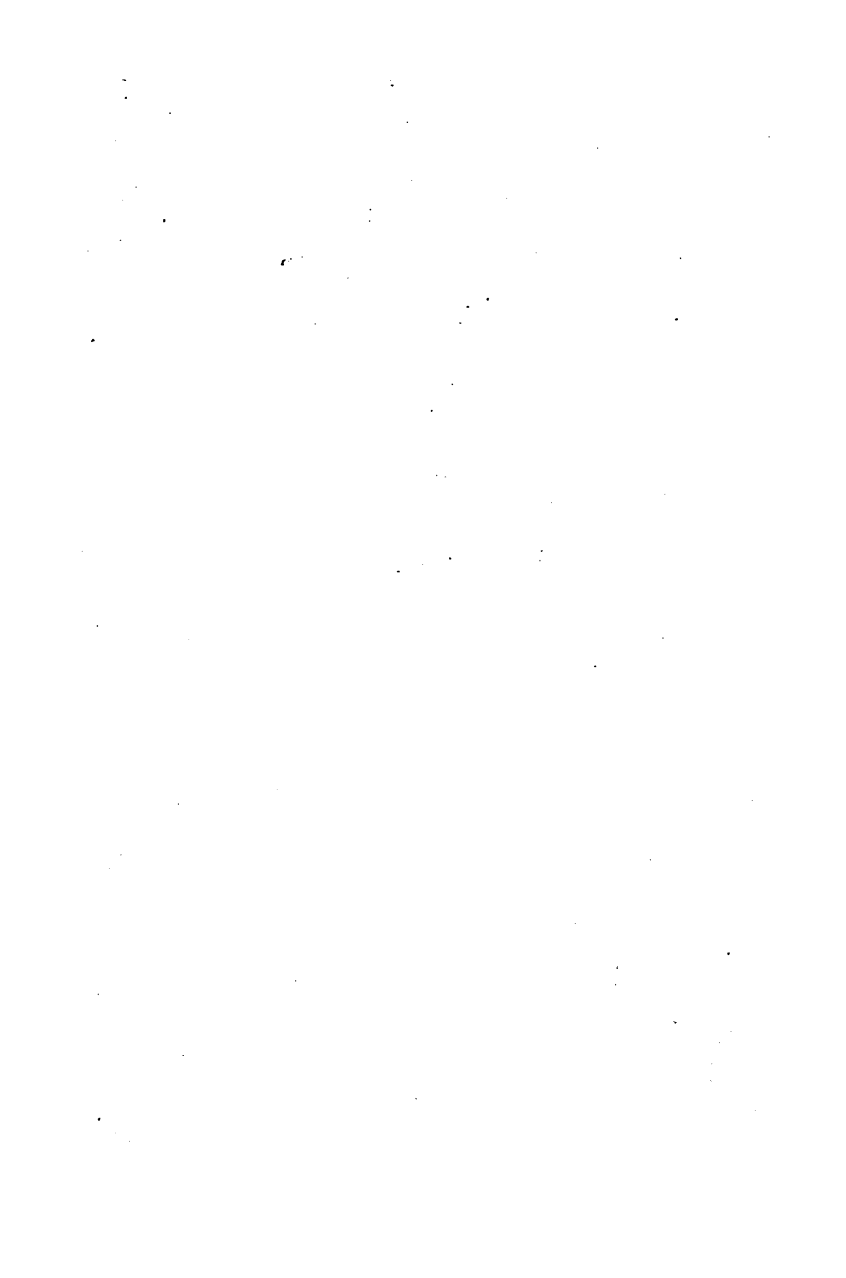


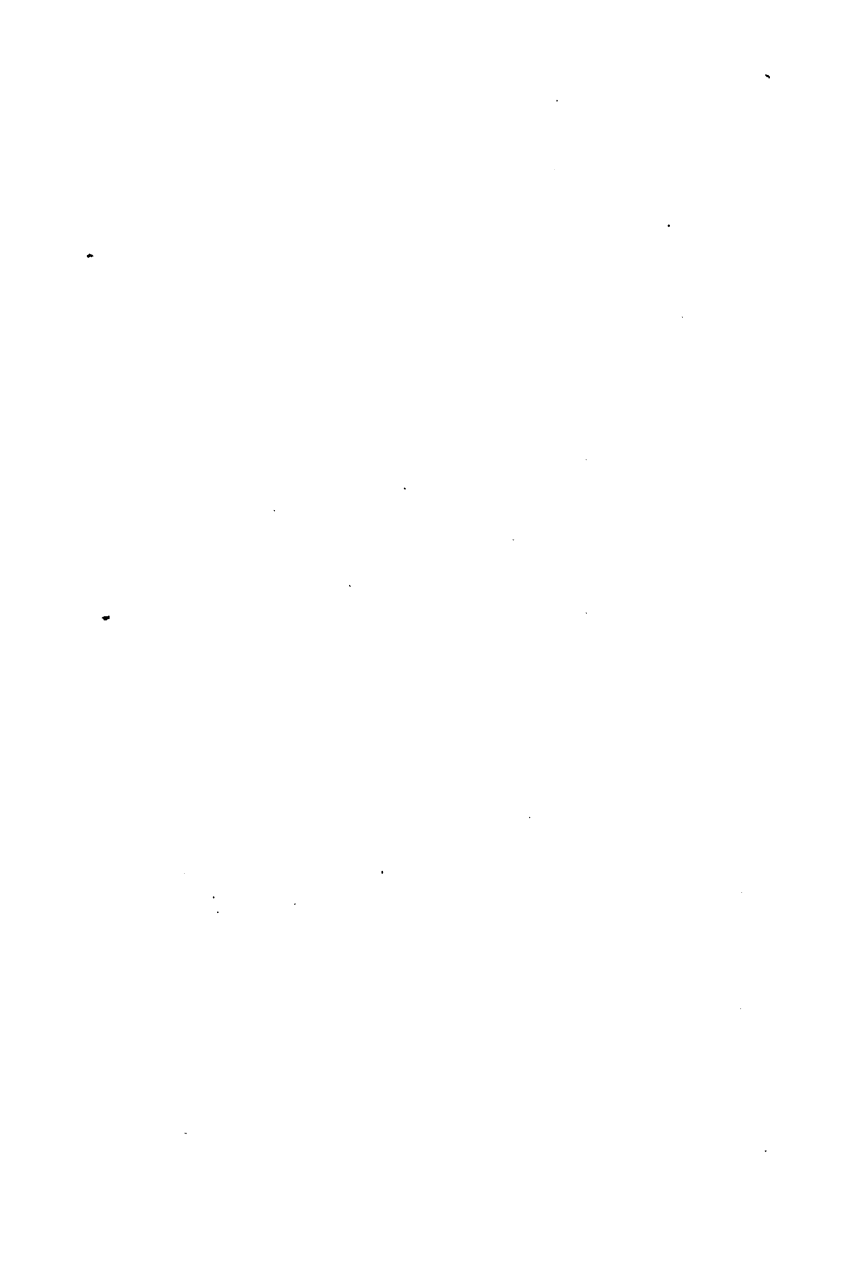


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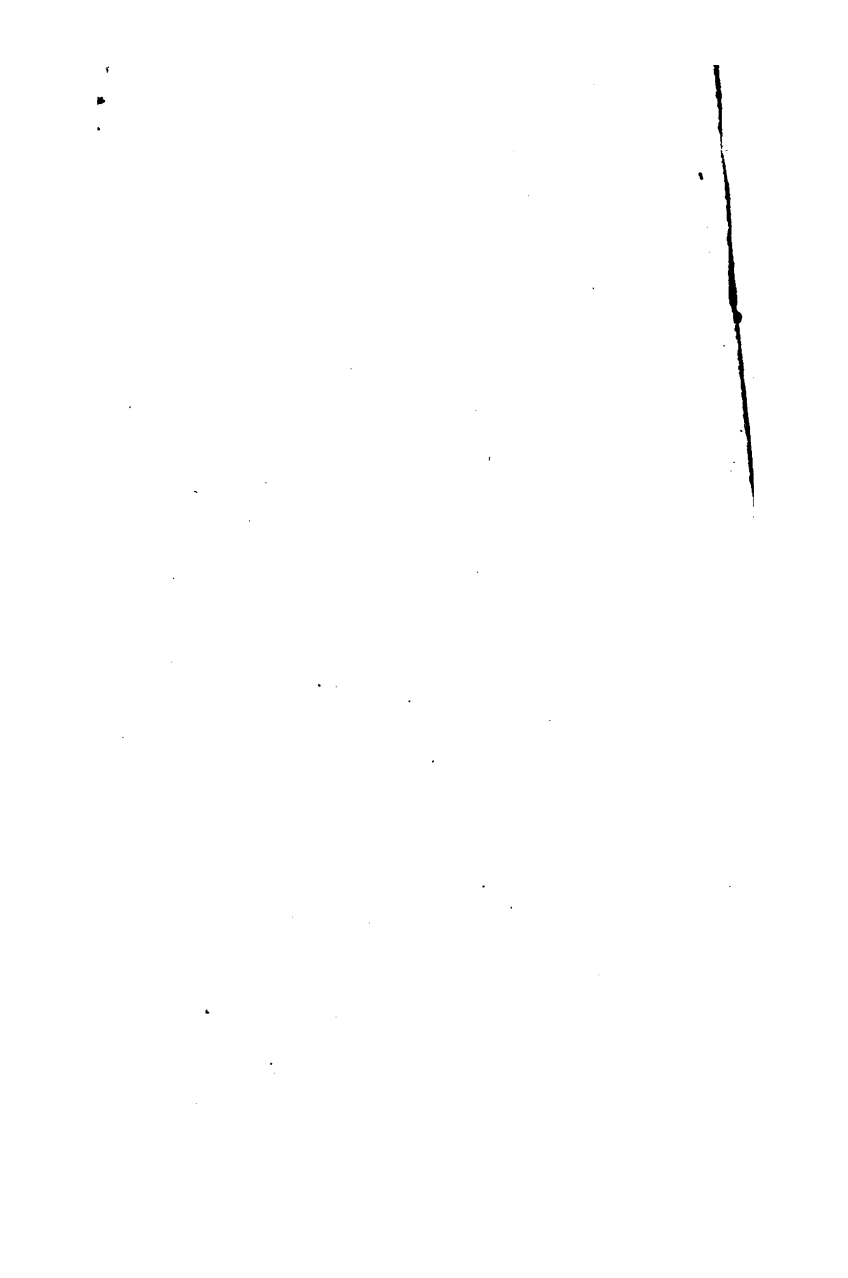
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ELEMENTS OF ARITHMETIC, PART FIRST.

**THE
PRIMARY-SCHOOL ARITHMETIC**

DESIGNED FOR BEGINNERS.

CONTAINING

COPIOUS MENTAL EXERCISES,

TOGETHER WITH A LARGE NUMBER OF

EXAMPLES FOR THE SLATE.

BY

HORACE MANN, LL.D.,

THE FIRST SECRETARY OF THE MASSACHUSETTS BOARD OF EDUCATION,

AND

PLINY E. CHASE, A.M.,

AUTHOR OF THE "COMMON-SCHOOL ARITHMETIC."

PHILADELPHIA:

PUBLISHED BY E. H. BUTLER & CO.

1851.

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PREFACE.

THE want of a suitable introduction, constructed on a plan similar to Chase's "Common-School Arithmetic," and to the "Arithmetic Practically Applied," by Mann and Chase, has induced the subscribers to prepare a Revised Edition of the "Elements of Arithmetic."

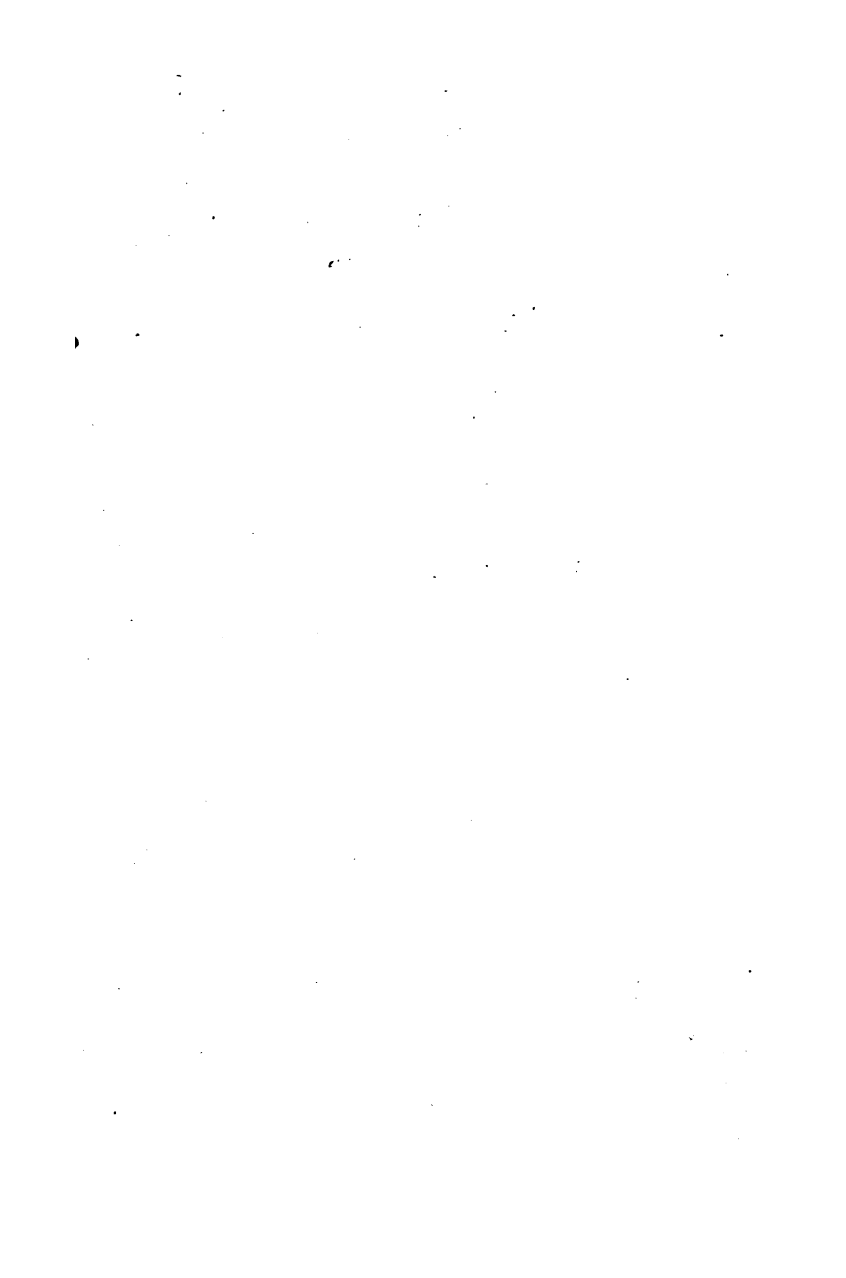
The respective shares of our joint labor in this revision, are the same as were set forth in the Prefaces to the "Arithmetic Practically Applied;" and although the nature of the work precludes a full adoption and development of the plan pursued in our former undertaking, yet we have sought to introduce as much valuable information as could be incidentally conveyed, and to retain all the novel features that have been so generally commended in the work for which this is intended as a substitute.

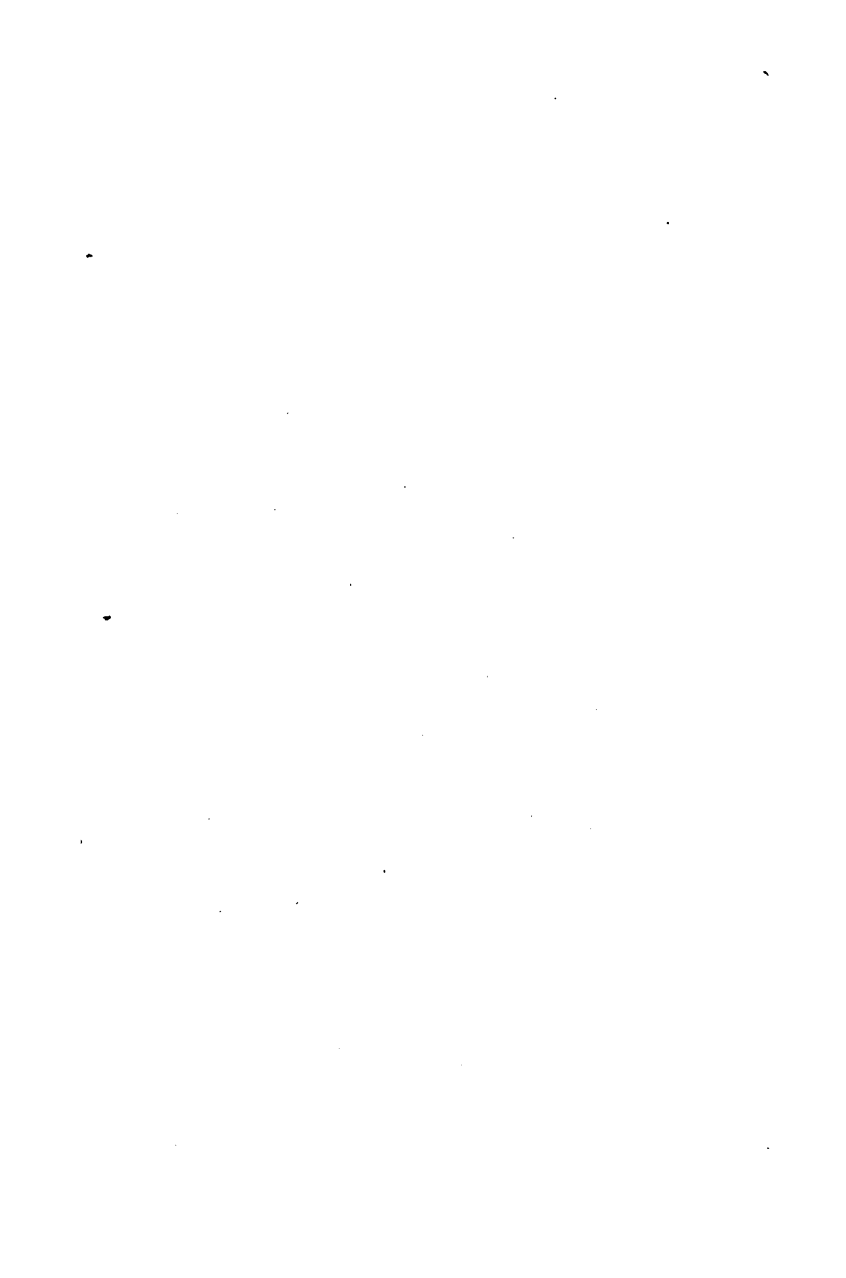
We have been pleased to find that the quality in our plan which we ourselves had most highly prized, has received the most liberal commendations of others;—we mean its eminently instructive and suggestive character. We have endeavored, in the present little work, not only to convey general information, but also, in its preliminary steps, to bring indirectly to the notice and

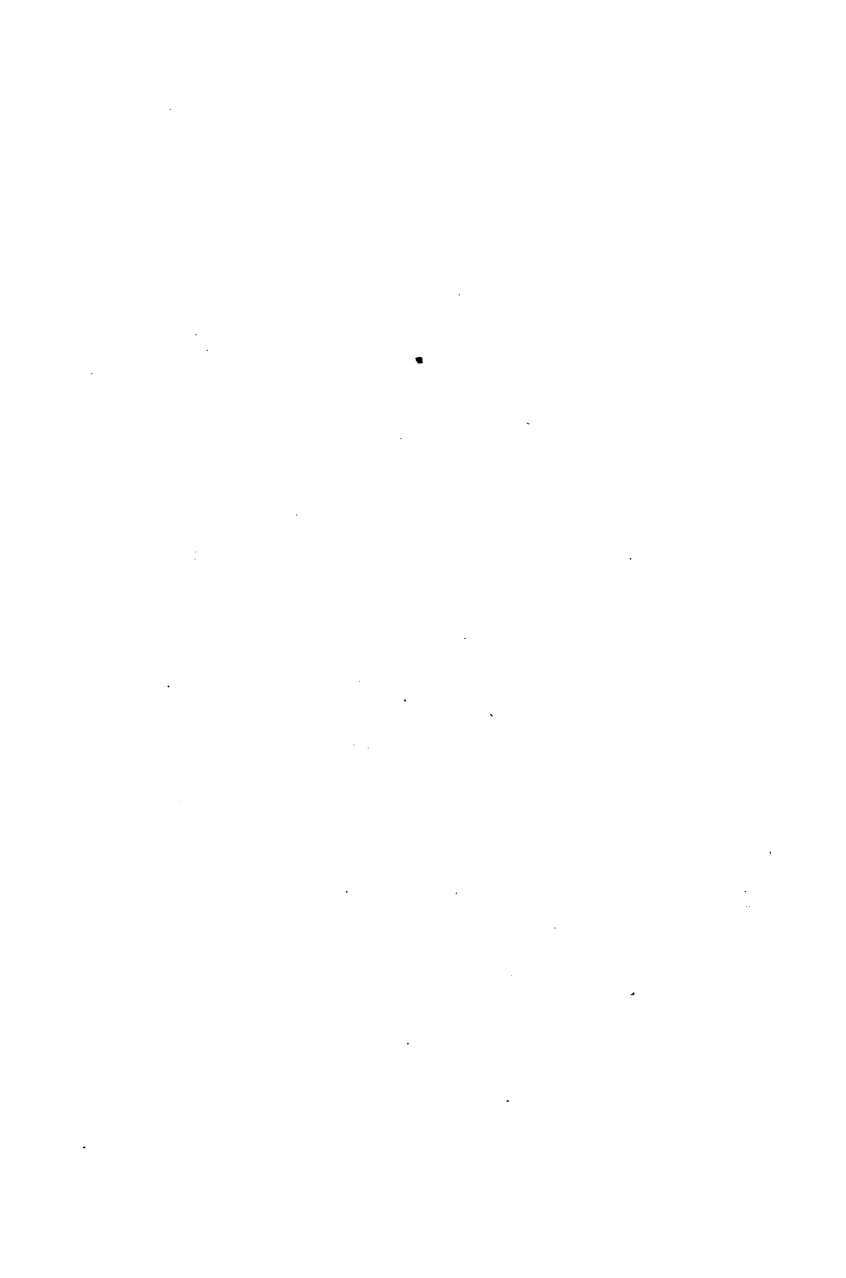
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I. MENTAL EXERCISES.

1. COUNTING.

1.

One.

|

2. One and one are two.

One Two.

| |

3. Two and one are three.

One Two Three.

| | |

4. Three and one are four.

One Two Three Four.

| | | |

5. Four and one are five.

One Two Three Four Five.

| | | | |

6. Five and one are six.

One Two Three Four Five Six.

| | | | | |

7. Six and one are seven.

One Two Three Four Five Six Seven.

| | | | | | |

8. Seven and one are eight.

One Two Three Four Five Six Seven Eight.

| | | | | | | |

9. Eight and one are nine.

One Two Three Four Five Six Seven Eight Nine.

| | | | | | | |

10. Nine and one are ten.

One Two Three Four Five Six Seven Eight Nine Ten.

| | | | | | | |

11. Ten and one are eleven.

One Two Three Four Five Six Seven Eight Nine Ten Eleven.

| | | | | | | |

12. Eleven and one are twelve.

One Two Three Four Five Six Seven Eight Nine Ten Eleven Twelve

| | | | | | | |

13. How many must be added to one, to make five?
Five is how many more than one? If you take one
from five, how many will be left?

14. Two and how many more are six? Two from
six leaves how many? Six is how many more than
two? How many ones are there in six? How many
twos? How many threes?

15. How many must be added to three to make five?
Five is how many more than three? If you take three
from five how many will be left? How many ones
are there in five? How many twos? How many
threes?

16. Four and how many are seven? Four from
seven leaves how many? What is the difference be-
tween four and seven? How many ones are there in

seven? How many twos? How many threes? How many fours?

17. How many ones are there in ten? How many twos? How many fives?

2. INTRODUCTORY EXAMPLES.

1. How many eyes have you? How many ears? How many hands? How many feet?

2. If you count your eyes and ears together, how many will they make? If you count your ears and hands together? Your hands and feet?

3. How many are two and two? Two and one?

4. How many fingers have you on your right hand? How many on your left? How many on both together?

5. How many are four and four? Four and one? Four and two? Four and three?

6. If you pay five cents for the postage of a letter, and two cents for the postage of a newspaper, how much will you pay for both?*

7. How many are five and two? Five and one? Five and three?

8. The postage on a half-ounce letter in Great Britain, is only one penny. How much would be the postage on two letters? On three letters? On four letters? On five letters?

* If the pupil finds a difficulty in solving any of the questions, let him make marks on the board or on his slate, or give him beans or grains of corn, and he will soon learn to work with ease.

9. A penny is worth two cents.* How many cents are two pennies worth? Three pennies? Four pennies?

10. An animal that has two feet, is called a biped. How many feet have two bipeds? Three bipeds?

11. A tripod is a stool that has three feet. How many feet have two tripods? How many are three and three?

12. A quadruped is an animal that has four feet. How many feet have two quadrupeds?

13. How many more feet has a quadruped than a biped?

14. If you learn two lessons in one day, and three in the next day, how many will you learn in both?

15. How many are two and three? Three and two? Three and three?

16. How many feet have a chair and a tripod? How many are four and three?

17. How many feet have two tripods and a biped? How many are three and three and two?

18. A trident is an instrument that has three teeth or prongs. If James had one trident, and Eliza another, and Charles another, how many teeth or prongs would the three tridents have?

19. How many are three and three and three?

20. If one of the legs of a quadruped should be caught in a trap, how many would be left out? One from four leaves how many?

* Nearly.

21. I paid five dollars for a pair of pantaloons, and two dollars for a vest. How much did they both cost?

22. How many are five and two? Five and three? Five and four?

23. A cooking stove consumed two tons of coal in the winter, and one in the summer. How much more did it consume in the winter than in the summer?

24. One from two leaves how many? One from three? One from four?

25. William has four front teeth. How many will he have after losing two of them?

26. Two from four leaves how many? Two from three? Two from five?

27. A man earned seven dollars one week, but the next week he earned only five dollars. How much less did he earn the second week than the first?

28. Five from seven leaves how many? Five from eight? Five from six?

29. Seven days make one week. After three days of a week are gone, how many will be left?

30. Three from seven leaves how many? Three from six? Three from five?

31. How many days are there in a week and one day? In a week and two days? In a week and three days?

32. How many are seven and one? Seven and two? Seven and three?

33. A triangle is a figure that has three sides and three angles; a square is a figure that has four sides and four angles. How many sides are there in a triangle and a square? How many more in a square than in a triangle?

34. A pentagon has five sides and five angles. How many sides and how many angles are there in a pentagon and a square? A pentagon and a triangle?

35. A hexagon has six sides and six angles. How many more sides has a hexagon than a triangle? How many more than a square?

36. A heptagon has seven sides and seven angles. How many angles in a heptagon and a pentagon?

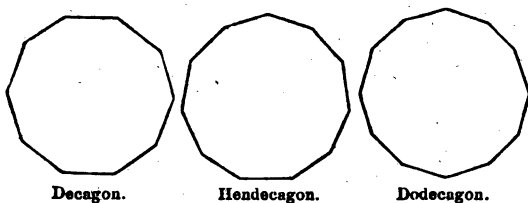
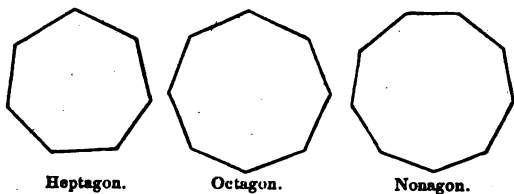
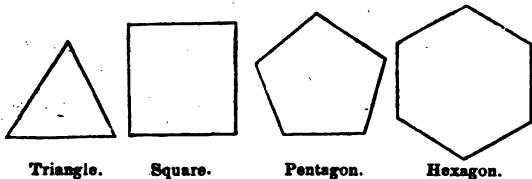
37. An octagon has eight sides and eight angles. In how many squares is there the same number of sides and of angles as in an octagon?

38. A nonagon has nine sides and nine angles. In how many triangles is there the same number of sides and of angles as in a nonagon?

39. A decagon has ten sides and ten angles. In how many pentagons is there the same number of sides and of angles as in a decagon?

40. A hendecagon has eleven sides and eleven angles. How many more sides in a hendecagon than in an octagon? How many more than in a triangle?

41. A dodecagon has twelve sides and twelve angles. In how many triangles is there the same number of sides and of angles as in a dodecagon? In how many squares? In how many hexagons?



3. NUMERATION.

Hundreds.



Tens.



Units.

I. *Units.*

0. Naught, or nothing.

1. One, or a unit.

2. Two, or two units.

■

3. Three, or three units.

■■

4. Four, or four units.

■■■

5. Five, or five units.

■■■■

6. Six, or six units.

■■■

7. Seven, or seven units.

■■■■

8. Eight, or eight units.

■■■■■

9. Nine, or nine units.

■■■■■■

II. *Tens and Units.*

Ten units make one ten.

10. Ten,* or

1 ten and 0 units.

1 0

■■■

11. Eleven, or

1 ten and 1 unit.

1 1

■■■ ■

12. Twelve, or

1 ten and 2 units.

1 2

■■■ ■■

13. Thirteen, or

1 ten and 3 units.

1 3

■■■ ■■

14. Fourteen, or

1 ten and 4 units.

1 4

■■■ ■■■

15. Fifteen, or

1 ten and 5 units.

1 5

■■■ ■■■■

* Show that the second figure (counting from the right hand) represents the number of *tens*, and the first figure the number of *units* over the given number of tens. Explain, also, the use of 0.

16. Sixteen, or
1 ten and 6 units.



17. Seventeen, or
1 ten and 7 units.



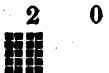
18. Eighteen, or
1 ten and 8 units.



19. Nineteen, or
1 ten and 9 units.



20. Twenty,* or
2 tens and 0 units.



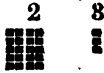
21. Twenty-one, or
2 tens and 1 unit.



22. Twenty-two, or
2 tens and 2 units.



23. Twenty-three, or
2 tens and 3 units.



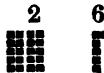
24. Twenty-four, or
2 tens and 4 units.



25. Twenty-five, or
2 tens and 5 units.



26. Twenty-six, or
2 tens and 6 units.



27. Twenty-seven, or
2 tens and 7 units.

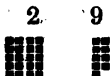


* Explain the meaning of the termination *ty*. Show that *twenty* is *twain ty* or two tens; *thir ty* is three tens, &c.

28. Twenty-eight, or
2 tens and 8 units.



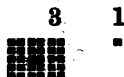
29. Twenty-nine, or
2 tens and 9 units.



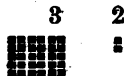
30. Thirty, or
3 tens and 0 units.



31. Thirty-one, or
3 tens and 1 unit.



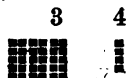
32. Thirty-two, or
3 tens and 2 units.



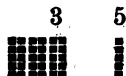
33. Thirty-three, or
3 tens and 3 units.



34. Thirty-four, or
3 tens and 4 units.



35. Thirty-five, or
3 tens and 5 units.



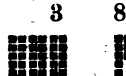
36. Thirty-six, or
3 tens and 6 units.



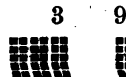
37. Thirty-seven, or
3 tens and 7 units.



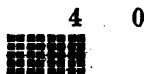
38. Thirty-eight, or
3 tens and 8 units.



39. Thirty-nine, or
3 tens and 9 units.



40. Forty, or
4 tens and 0 units.



41. Forty-one, or
4 tens and 1 unit.



42. Forty-two, or
4 tens and 2 units.



43. Forty-three, or
4 tens and 3 units.



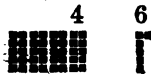
44. Forty-four, or
4 tens and 4 units.



45. Forty-five, or
4 tens and 5 units.



46. Forty-six, or
4 tens and 6 units.



47. Forty-seven, or
4 tens and 7 units.



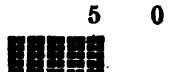
48. Forty-eight, or
4 tens and 8 units.



49. Forty-nine, or
4 tens and 9 units.



50. Fifty, or
5 tens and 0 units.



51. Fifty-one, or
5 tens and 1 unit.



- 52. Fifty-two, or
5 tens and 2 units.**



- 53. Fifty-three, or
5 tens and 3 units.**



- 54. Fifty-four, or
5 tens and 4 units.**



- 55. Fifty-five, or
5 tens and 5 units.**



- 58. Fifty-six, or
5 tens and 6 units.**



- 57. Fifty-seven, or
5 tens and 7 units.**



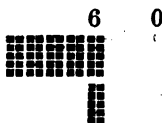
58. Fifty-eight, or
5 tens and 8 units.



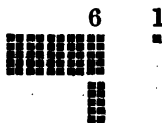
59. Fifty-nine, or
5 tens and 9 units.



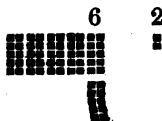
60. Sixty, or
6 tens and 0 units.



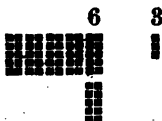
61. Sixty-one, or
6 tens and 1 unit.



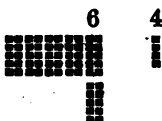
62. Sixty-two, or
6 tens and 2 units.



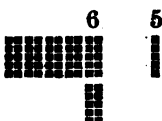
63. Sixty-three, or
6 tens and 3 units.



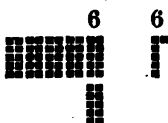
64. Sixty-four, or
6 tens and 4 units.



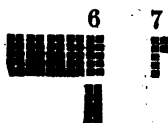
65. Sixty-five, or
6 tens and 5 units.



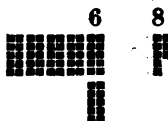
66. Sixty-six, or
6 tens and 6 units.



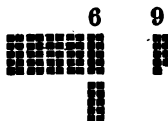
67. Sixty-seven, or
6 tens and 7 units.



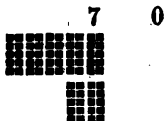
68. Sixty-eight, or
6 tens and 8 units.



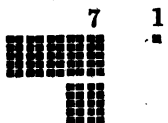
69. Sixty-nine, or
6 tens and 9 units.



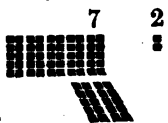
70. Seventy, or
7 tens and 0 units.



71. Seventy-one, or
7 tens and 1 unit.



72. Seventy-two, or
7 tens and 2 units.



73. Seventy-three, or
7 tens and 3 units.



74. Seventy-four, or
7 tens and 4 units.



75. Seventy-five, or
7 tens and 5 units.



76. Seventy-six, or
7 tens and 6 units.



77. Seventy-seven, or
7 tens and 7 units.



78. Seventy-eight, or
7 tens and 8 units.



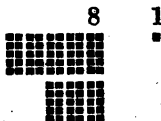
79. Seventy-nine, or
7 tens and 9 units.



80. Eighty, or
8 tens and 0 units.



81. Eighty-one, or
8 tens and 1 unit.



82. Eighty-two, or
8 tens and 2 units.



83. Eighty-three, or
8 tens and 3 units.



84. Eighty-four, or
8 tens and 4 units.



85. Eighty-five, or
8 tens and 5 units.



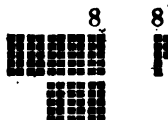
86. Eighty-six, or
8 tens and 6 units.



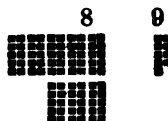
87. Eighty-seven, or
8 tens and 7 units.



88. Eighty-eight, or
8 tens and 8 units.



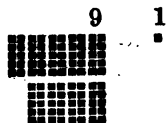
89. Eighty-nine, or
8 tens and 9 units.



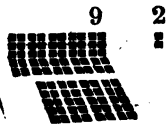
90. Ninety, or
9 tens and 0 units.



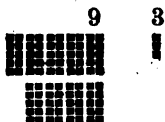
91. Ninety-one, or
9 tens and 1 unit.



92. Ninety-two, or
9 tens and 2 units.



93. Ninety-three, or
9 tens and 3 units.



97. Ninety-seven, or
9 tens and 7 units.



94. Ninety-four, or
9 tens and 4 units.



98. Ninety-eight, or
9 tens and 8 units.



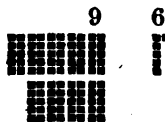
95. Ninety-five, or
9 tens and 5 units.



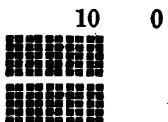
99. Ninety-nine, or
9 tens and 9 units.



96. Ninety-six, or
9 tens and 6 units.



100. One hundred,* or
10 tens and 0 units.



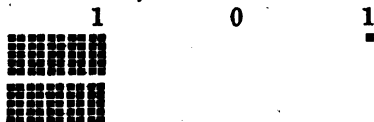
* Show that the third figure (counting from the right hand) represents the number of *hundreds*.

III. *Hundreds, Tens, and Units.*

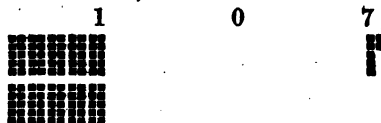
Ten tens make one hundred.

One hundred units make one hundred.

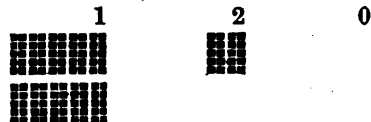
101. One-hundred and one, or
1 hundred, 0 tens and 1 unit.



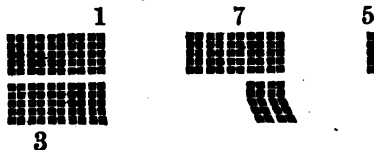
107. One hundred and seven, or
1 hundred, 0 tens and 7 units.



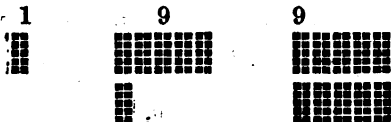
120. One hundred and twenty, or
1 hundred, 2 tens and 0 units.



175. One hundred and seventy-five, or
1 hundred, 7 tens and 5 units.



199. One hundred and ninety-nine, or
1 hundred, 9 tens, and 9 units.



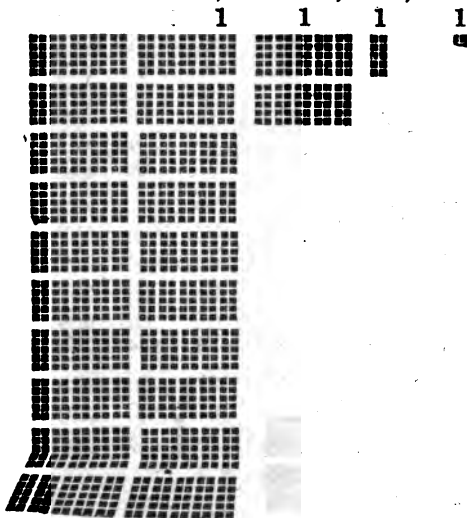
VI. *Thousands, Hundreds, Tens, and Units.*

Ten hundreds make one thousand.

One hundred tens make one thousand.

One thousand units make one thousand.

1111. One thousand one hundred and eleven, or
1 thousand, 1 hundred, 1 ten, and 1 unit.



Read the following numbers in both of the ways given in the preceding table.

104	133	162	191	220	249	278	317	400
105	134	163	192	221	250	279	320	401
106	135	164	193	222	251	280	321	402
107	136	165	194	223	252	281	322	403
108	137	166	195	224	253	282	327	404
109	138	167	196	225	254	283	329	405
110	139	168	197	226	255	284	330	406
111	140	169	198	227	256	285	331	407
112	141	170	199	228	257	286	335	408
113	142	171	200	229	258	287	336	409
114	143	172	201	230	259	288	338	410
115	144	173	202	231	260	289	340	411
116	145	174	203	232	261	290	343	412
117	146	175	204	233	262	291	344	420
118	147	176	205	234	263	292	349	422
119	148	177	206	235	264	293	350	430
120	149	178	207	236	265	294	351	431
121	150	179	208	237	266	295	352	440
122	151	180	209	238	267	296	359	444
123	152	181	210	239	268	297	360	450
124	153	182	211	240	269	298	363	457
125	154	183	212	241	270	299	364	460
126	155	184	213	242	271	300	370	469
127	156	185	214	243	272	301	377	470
128	157	186	215	244	273	303	380	475
129	158	187	216	245	274	307	389	480
130	159	188	217	246	275	310	390	488
131	160	189	218	247	276	311	392	490
132	161	190	219	248	277	314	399	500

506	570	630	700	730	800	840	900	999
517	580	642	701	740	801	845	953	916
520	590	650	705	750	802	850	982	907
530	600	666	709	760	810	860	927	940
540	609	670	710	770	812	870	913	959
550	619	686	711	780	820	880	908	923
560	629	690	720	790	837	890	944	973

4. TABLES.

I. ADDITION AND SUBTRACTION TABLE.

0	1	2	3	4	5	6	7	8	9	10	11	12
1	2	3	4	5	6	7	8	9	10	11	12	13
2	3	4	5	6	7	8	9	10	11	12	13	14
3	4	5	6	7	8	9	10	11	12	13	14	15
4	5	6	7	8	9	10	11	12	13	14	15	16
5	6	7	8	9	10	11	12	13	14	15	16	17
6	7	8	9	10	11	12	13	14	15	16	17	18
7	8	9	10	11	12	13	14	15	16	17	18	19
8	9	10	11	12	13	14	15	16	17	18	19	20
9	10	11	12	13	14	15	16	17	18	19	20	21
10	11	12	13	14	15	16	17	18	19	20	21	22
11	12	13	14	15	16	17	18	19	20	21	22	23
12	13	14	15	16	17	18	19	20	21	22	23	24

EXAMPLES TO BE SOLVED WITH THE TABLE.

How many are 11 and 5; 8 and 6; 4 and 7; 12 and 12; 10 and 7; 5 from 14; 8 from 20; 3 from 15; 7 from 16; 9 from 14; 8 from 17; 6 from 13; 7 from 24? &c. &c.

II. MULTIPLICATION AND DIVISION TABLE.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

5. ADDITION.

1. How many are 1 and 1; 1 and 2; 1 and 3; 1 and 4; 1 and 5; 1 and 6; 1 and 7; 1 and 8; 1 and 9; 1 and 10; 1 and 11; 1 and 12?

2. How many are 2 and 1; 2 and 2; 2 and 3; 2 and 4; 2 and 5; 2 and 6; 2 and 7; 2 and 8; 2 and 9; 2 and 10; 2 and 11; 2 and 12?

3. How many are 3 and 1; 3 and 2; 3 and 3; 3 and 4; 3 and 5; 3 and 6; 3 and 7; 3 and 8; 3 and 9; 3 and 10; 3 and 11; 3 and 12?

4. How many are 4 and 1; 4 and 2; 4 and 3; 4 and 4; 4 and 5; 4 and 6; 4 and 7; 4 and 8; 4 and 9; 4 and 10; 4 and 11; 4 and 12?

5. How many are 5 and 1; 5 and 2; 5 and 3; 5 and 4; 5 and 5; 5 and 6; 5 and 7; 5 and 8; 5 and 9; 5 and 10; 5 and 11; 5 and 12?

6. How many are 6 and 1; 6 and 2; 6 and 3; 6 and 4; 6 and 5; 6 and 6; 6 and 7; 6 and 8; 6 and 9; 6 and 10; 6 and 11; 6 and 12?

7. How many are 7 and 1; 7 and 2; 7 and 3; 7 and 4; 7 and 5; 7 and 6; 7 and 7; 7 and 8; 7 and 9; 7 and 10; 7 and 11; 7 and 12?

8. How many are 8 and 1; 8 and 2; 8 and 3; 8 and 4; 8 and 5; 8 and 6; 8 and 7; 8 and 8; 8 and 9; 8 and 10; 8 and 11; 8 and 12?

9. How many are 9 and 1; 9 and 2; 9 and 3; 9 and 4; 9 and 5; 9 and 6; 9 and 7; 9 and 8; 9 and 9; 9 and 10; 9 and 11; 9 and 12?

10. How many are 10 and 1; 10 and 2; 10 and 3; 10 and 4; 10 and 5; 10 and 6; 10 and 7; 10 and 8; 10 and 9; 10 and 10; 10 and 11; 10 and 12?

11. How many are 11 and 1; 11 and 2; 11 and 3; 11 and 4; 11 and 5; 11 and 6; 11 and 7; 11 and 8; 11 and 9; 11 and 10; 11 and 11; 11 and 12?

12. How many are 12 and 1; 12 and 2; 12 and 3; 12 and 4; 12 and 5; 12 and 6; 12 and 7; 12 and 8; 12 and 9; 12 and 10; 12 and 11; 12 and 12?

6. ADDITION.—CONTINUED.

1. How many are 2 and 1; 1 and 2; 2 and 7; 7 and 2; 2 and 2; 2 and 6; 6 and 2; 2 and 8; 8 and 2; 2 and 3; 3 and 2; 2 and 5; 5 and 2; 2 and 9; 9

and 2; 2 and 11; 11 and 2; 2 and 4; 4 and 2; 2 and 10; 10 and 2; 2 and 12; 12 and 2?

2. How many are 3 and 1; 1 and 3; 3 and 3; 3 and 2; 2 and 3; 3 and 4; 4 and 3; 3 and 6; 6 and 3; 3 and 10; 10 and 3; 3 and 5; 5 and 3; 3 and 7; 7 and 3; 3 and 9; 9 and 3; 3 and 11; 11 and 3; 3 and 8; 8 and 3; 3 and 12; 12 and 3?

3. How many are 4 and 1; 1 and 4; 4 and 4; 4 and 2; 2 and 4; 4 and 5; 5 and 4; 4 and 7; 7 and 4; 4 and 3; 3 and 4; 4 and 6; 6 and 4; 4 and 8; 8 and 4; 4 and 10; 10 and 4; 4 and 12; 12 and 4; 4 and 9; 9 and 4; 4 and 11; 11 and 4?

4. How many are 5 and 1; 1 and 5; 5 and 3; 3 and 5; 5 and 6; 6 and 5; 5 and 4; 4 and 5; 5 and 2; 2 and 5; 5 and 7; 7 and 5; 5 and 5; 5 and 8; 8 and 5; 5 and 10; 10 and 5; 5 and 12; 12 and 5; 5 and 11; 11 and 5; 5 and 9; 9 and 5?

5. How many are 6 and 1; 1 and 6; 6 and 6; 6 and 10; 10 and 6; 6 and 4; 4 and 6; 6 and 2; 2 and 6; 6 and 8; 8 and 6; 6 and 3; 3 and 6; 6 and 5; 5 and 6; 6 and 7; 7 and 6; 6 and 9; 9 and 6; 6 and 12; 12 and 6; 6 and 11; 11 and 6?

6. How many are 7 and 2; 2 and 7; 7 and 4; 4 and 7; 7 and 1; 1 and 7; 7 and 10; 10 and 7; 7 and 3; 3 and 7; 7 and 7; 7 and 5; 5 and 7; 7 and 8; 8 and 7; 7 and 6; 6 and 7; 7 and 12; 12 and 7; 7 and 9; 9 and 7; 7 and 11; 11 and 7?

7. How many are 8 and 1; 1 and 8; 8 and 3; 3 and 8; 8 and 5; 5 and 8; 8 and 7; 7 and 8; 8 and 2; 2

and 8; 8 and 10; 10 and 8; 8 and 8; 8 and 4; 4 and 8; 8 and 6; 6 and 8; 8 and 9; 9 and 8; 8 and 12; 12 and 8; 8 and 11; 11 and 8?

8. How many are 9 and 1; 1 and 9; 9 and 5; 5 and 9; 9 and 3; 3 and 9; 9 and 10; 10 and 9; 9 and 2; 2 and 9; 9 and 12; 12 and 9; 9 and 8; 8 and 9; 9 and 6; 6 and 9; 9 and 4; 4 and 9; 9 and 7; 7 and 9; 9 and 9; 9 and 11; 11 and 9?

9. How many are 10 and 1; 1 and 10; 10 and 7; 7 and 10; 10 and 10; 10 and 2; 2 and 10; 10 and 4; 4 and 10; 10 and 8; 8 and 10; 10 and 3; 3 and 10; 10 and 11; 11 and 10; 10 and 5; 5 and 10; 10 and 12; 12 and 10; 10 and 6; 6 and 10; 10 and 9; 9 and 10?

10. How many tens are 8 tens and 2 tens; 5 tens and 4 tens; 3 tens and 3 tens; 2 tens and 2 tens; 7 tens and 10 tens; 6 tens and 8 tens; 9 tens and 9 tens; 11 tens and 5 tens; 12 tens and 4 tens; 2 tens and 5 tens?

11. How many tens are 3 tens and 5 tens; 2 tens and 4 tens; 6 tens and 2 tens; 3 tens and 4 tens; 7 tens and 4 tens; 6 tens and 6 tens; 2 tens and 7 tens; 3 tens and 6 tens; 4 tens and 6 tens; 5 tens and 5 tens?

12. How many tens are 10 tens and 2 tens; 3 tens and 7 tens; 8 tens and 4 tens; 5 tens and 5 tens; 6 tens and 7 tens; 4 tens and 4 tens; 12 tens and 2 tens; 11 tens and 3 tens; 7 tens and 7 tens; 12 tens and 3 tens?

13. How many tens are 8 tens and 8 tens; 2 tens and 11 tens; 10 tens and 10 tens; 12 tens and 7 tens; 9 tens and 3 tens; 4 tens and 11 tens; 12 tens and 6 tens; 10 tens and 12 tens; 11 tens and 9 tens; 9 tens and 4 tens?

14. How many tens are 10 tens and 3 tens; 6 tens and 10 tens; 8 tens and 2 tens; 10 tens and 11 tens; 11 tens and 8 tens; 9 tens and 5 tens; 7 tens and 8 tens; 10 tens and 9 tens; 6 tens and 11 tens; 8 tens and 5 tens?

15. How many tens are 2 tens and 9 tens; 3 tens and 8 tens; 4 tens and 10 tens; 7 tens and 5 tens; 9 tens and 6 tens; 7 tens and 11 tens; 10 tens and 5 tens; 7 tens and 9 tens; 8 tens and 12 tens; 6 tens and 5 tens?

16. How many tens are 10 tens and 8 tens; 9 tens and 12 tens; 5 tens and 12 tens; 8 tens and 9 tens; 7 tens and 6 tens; 9 tens and 9 tens; 7 tens and 9 tens; 8 tens and 8 tens; 8 tens and 6 tens; 9 tens and 5 tens?

7. ADDITION AND SUBTRACTION.

1. A man bought a coat for 10 dollars, a pair of pantaloons for 6 dollars, and a vest for 3 dollars. How much did they all cost him?

2. Thomas is 6 years old, and Mary is 8 years old. What is the sum of both their ages? How many years older is Thomas than Mary?

3. Charles is 5 years old, and William is 8 years old.

In how many years will Charles be as old as William is now, and how old will William be then?

4. From the following table, which shows the classes into which flowers are divided in botany, find how many stamens there are in the 14th class. In the 15th class.

BOTANICAL TABLE.

Name of Class.	Characteristics.
1. Monandria	One stamen.
2. Diandria	Two stamens.
3. Triandria	Three stamens.
4. Tetrandia	Four stamens.
5. Pentandria	Five stamens.
6. Hexandria	Six stamens.
7. Heptandria	Seven stamens.
8. Octandria	Eight stamens.
9. Enneandria	Nine stamens.
10. Decandria	Ten stamens.
11. Dodecandria	Twelve stamens.
12. Icosandria	Twenty or more stamens inserted on the calyx.
18. Polyandria	Many stamens.
14. Didynamia	Two long stamens, and two short.
15. Tetradynamia	Four long stamens, and two short.
16. Monadelphia	Stamens united by their filaments into one parcel.
17. Diadelphia	Stamens united in two distinct sets.
18. Polyadelphia	Stamens united in more than two sets.
19. Syngenesia	Anthers united into a cylinder; flowers compound.
20. Gynandria	Stamens situated on the pistil.
21. Monœcia	Barren and fertile flowers on the same plant.
22. Dioecia	Barren and fertile flowers on different plants.
23. Polygamia	Perfect flowers together with barren, or fertile, or both, on the same, or on distinct plants.
24. Cryptogamia	Fructification anomalous or concealed.

5. How many more stamens are there in a flower

of the 10th class, than in one of the 6th? How many more than in one of the 5th? Of the 8th? Of the 4th? Of the 3d? Of the 9th? Of the 2d? Of the 7th? Of the 1st?

6. How many are 10 less 6? 10 less 5? 10 less 8? 10 less 4? 10 less 3? 10 less 9? 10 less 2? 10 less 7? 10 less 1?

7. How many scholars are there now in your class? If 4 should go out, how many would be left?

8. A pound avoirdupois is 16 ounces. How many ounces are there in a pound and 3 ounces? In a pound and 5 ounces?

9. If you take 4 ounces from a pound and 5 ounces, how many ounces will be left?

10. A dime is worth 10 cents, and a half dime is worth 5 cents. What is the value of a dime and a half dime? How much more is a dime worth, than a half dime?

11. A window has 4 rows of panes, and there are 3 panes in each row. How many are there in the whole window? How many are 3 and 3 and 3 and 3?

12. Propose questions to each other from the table given under Example 4.

8. ADDITION AND SUBTRACTION.

1. How many will be left, if you take 1 from 2; 1 from 3; 2 from 3; 1 from 4; 3 from 4; 1 from 5; 4 from 5; 1 from 6; 5 from 6; 6 from 7; 1 from 8; 7 from 8; 1 from 9; 8 from 9; 1 from 10; 9 from 10;

1 from 11; 10 from 11; 1 from 12; 11 from 12; 1 from 13; 12 from 13?

2. How many will be left, if you take 2 from 4; 2 from 5; 3 from 5; 2 from 6; 4 from 6; 2 from 7; 5 from 7; 2 from 8; 6 from 8; 2 from 9; 7 from 9; 2 from 10; 8 from 10; 2 from 11; 9 from 11; 2 from 12; 10 from 12; 2 from 13; 11 from 13; 2 from 14; 12 from 14?

3. How many will be left, if you take 3 from 6; 3 from 7; 4 from 7; 3 from 8; 5 from 8; 3 from 9; 6 from 9; 3 from 10; 7 from 10; 3 from 11; 8 from 11; 3 from 12; 9 from 12; 3 from 13; 10 from 13; 3 from 14; 11 from 14; 3 from 15; 12 from 15?

4. How many will be left, if you take 4 from 8; 5 from 8; 4 from 9; 5 from 9; 4 from 10; 6 from 10; 5 from 10; 4 from 11; 7 from 11; 6 from 11; 5 from 11; 4 from 12; 8 from 12; 7 from 12; 5 from 12; 4 from 13; 9 from 13; 8 from 13; 5 from 13; 4 from 14; 10 from 14; 9 from 14; 5 from 14; 4 from 15; 5 from 15; 10 from 15; 11 from 15; 4 from 16; 5 from 16; 11 from 16; 12 from 16; 12 from 17; 5 from 17?

5. How many will be left, if you take 6 from 12; 7 from 14; 6 from 13; 7 from 13; 6 from 14; 8 from 14; 6 from 15; 9 from 15; 7 from 15; 8 from 15; 6 from 16; 10 from 16; 9 from 16; 7 from 16; 6 from 17; 11 from 17; 10 from 17; 7 from 17; 6 from 18; 12 from 18; 11 from 18; 7 from 18; 7 from 19; 12 from 19?

6. How many will be left, if you take 8 from 16; 9 from 17; 8 from 17; 9 from 18; 10 from 18; 8 from 18; 8 from 19; 9 from 19; 10 from 19; 11 from 19;

§8.] ADDITION AND SUBTRACTION. 37

8 from 20; 12 from 20; 9 from 20; 11 from 20; 10 from 20; 9 from 21; 12 from 21?

7. How many are 9 and 1; 19 and 1; 29 and 1; 39 and 1; 49 and 1; 59 and 1; 69 and 1; 79 and 1; 89 and 1; 99 and 1?

8. How many are 8 and 1; 18 and 1; 28 and 1; 38 and 1; 48 and 1; 58 and 1; 68 and 1; 78 and 1; 88 and 1; 98 and 1?

9. How many are 2 and 2; 12 and 2; 22 and 2; 32 and 2; 42 and 2; 52 and 2; 62 and 2; 72 and 2; 82 and 2; 92 and 2?

10. How many are 3 and 2; 13 and 2; 23 and 2; 33 and 2; 43 and 2; 53 and 2; 63 and 2; 73 and 2; 83 and 2; 93 and 2?

11. How many are 2 and 4; 12 and 4; 22 and 4; 32 and 4; 42 and 4; 52 and 4; 62 and 4; 72 and 4; 82 and 4; 92 and 4?

12. How many are 2 and 8; 12 and 8; 22 and 8; 32 and 8; 42 and 8; 52 and 8; 62 and 8; 72 and 8; 82 and 8; 92 and 8?

13. How many are 2 and 9; 12 and 9; 22 and 9; 32 and 9; 42 and 9; 52 and 9; 62 and 9; 72 and 9; 82 and 9; 92 and 9?

14. How many are 3 and 7; 13 and 7; 17 and 3; 23 and 7; 27 and 3; 37 and 3; 33 and 7; 43 and 7; 47 and 3; 57 and 3; 53 and 7; 63 and 7; 67 and 3; 77 and 3; 73 and 7; 83 and 7; 87 and 3; 97 and 3; 93 and 7?

15. How many are 3 and 8; 13 and 8; 23 and 8; 33 and 8; 43 and 8; 53 and 8; 63 and 8; 73 and 8; 83 and 8; 93 and 8?

16. How many are 3 and 9; 13 and 9; 23 and 9; 33 and 9; 43 and 9; 53 and 9; 63 and 9; 73 and 9; 83 and 9; 93 and 9?

17. How many are 4 and 9; 14 and 9; 19 and 4; 29 and 4; 24 and 9; 34 and 9; 39 and 4; 49 and 4; 44 and 9; 54 and 9; 59 and 4; 69 and 4; 64 and 9; 74 and 9; 79 and 4; 89 and 4; 84 and 9; 94 and 9; 99 and 4?

18. How many are 4 and 6; 14 and 6; 24 and 6; 34 and 6; 44 and 6; 54 and 6; 64 and 6; 74 and 6; 84 and 6; 94 and 6?

19. How many are 4 and 7; 14 and 7; 24 and 7; 34 and 7; 44 and 7; 54 and 7; 64 and 7; 74 and 7; 84 and 7; 94 and 7?

20. How many are 4 and 8; 14 and 8; 24 and 8; 34 and 8; 44 and 8; 54 and 8; 64 and 8; 74 and 8; 84 and 8; 94 and 8?

21. How many are 5 and 5; 15 and 5; 25 and 5; 35 and 5; 45 and 5; 55 and 5; 65 and 5; 75 and 5; 85 and 5; 95 and 5?

22. How many are 5 and 7; 7 and 5; 17 and 5; 15 and 7; 25 and 7; 27 and 5; 37 and 5; 35 and 7; 45 and 7; 47 and 5; 57 and 5; 55 and 7; 65 and 7; 67 and 5; 77 and 5; 75 and 7; 85 and 7; 87 and 5; 97 and 5; 95 and 7?

23. How many are 5 and 9; 15 and 9; 25 and 35 and 9; 45 and 9; 55 and 9; 65 and 9; 75 and 85 and 9; 95 and 9?

24. How many are 5 and 6; 15 and 6; 25 and 35 and 6; 45 and 6; 55 and 6; 65 and 6; 75 and 85 and 6; 95 and 6?

25. How many are 5 and 8; 15 and 8; 25 and 35 and 8; 45 and 8; 55 and 8; 65 and 8; 75 and 85 and 8; 95 and 8?

26. How many are 5 and 9; 15 and 9; 25 and 35 and 9; 45 and 9; 55 and 9; 65 and 9; 75 and 85 and 9; 95 and 9?

27. How many are 6 and 5; 16 and 5; 26 and 36 and 5; 46 and 5; 56 and 5; 66 and 5; 76 and 86 and 5; 96 and 5?

28. How many are 6 and 6; 16 and 6; 26 and 36 and 6; 46 and 6; 56 and 6; 66 and 6; 76 and 86 and 6; 96 and 6?

29. How many are 6 and 8; 16 and 8; 18 and 28 and 6; 26 and 8; 36 and 8; 38 and 6; 48 and 46 and 8; 56 and 8; 58 and 6; 68 and 6; 66 and 76 and 8; 78 and 6; 88 and 6; 86 and 8; 96 and 98 and 6?

30. How many are 6 and 7; 16 and 7; 26 and 36 and 7; 46 and 7; 56 and 7; 66 and 7; 76 and 86 and 7; 96 and 7?

31. How many are 6 and 9; 16 and 9; 28 and

36 and 9; 46 and 9; 56 and 9; 66 and 9; 76 and 9;
86 and 9; 96 and 9?

32. How many are 8 and 2; 18 and 2; 28 and 2;
38 and 2; 48 and 2; 58 and 2; 68 and 2; 78 and 2;
88 and 2; 98 and 2?

33. How many are 8 and 5; 18 and 5; 28 and 5;
38 and 5; 48 and 5; 58 and 5; 68 and 5; 78 and 5;
88 and 5; 98 and 5?

34. How many are 8 and 8; 18 and 8; 28 and 8;
38 and 8; 48 and 8; 58 and 8; 68 and 8; 78 and 8;
88 and 8; 98 and 8?

35. How many are 8 and 9; 18 and 9; 28 and 9;
38 and 9; 48 and 9; 58 and 9; 68 and 9; 78 and 9;
88 and 9; 98 and 9?

36. How many are 8 and 7; 7 and 8; 17 and 8;
18 and 7; 28 and 7; 27 and 8; 37 and 8; 38 and 7;
48 and 7; 47 and 8; 57 and 8; 58 and 7; 68 and 7;
67 and 8; 77 and 8; 78 and 7; 88 and 7; 87 and 8;
97 and 8; 98 and 7?

37. How many are 7 and 7; 17 and 7; 27 and 7;
37 and 7; 47 and 7; 57 and 7; 67 and 7; 77 and 7;
87 and 7; 97 and 7?

38. How many are 7 and 6; 17 and 6; 27 and 6;
37 and 6; 47 and 6; 57 and 6; 67 and 6; 77 and 6;
87 and 6; 97 and 6?

39. How many are 7 and 9; 17 and 9; 27 and 9;
37 and 9; 47 and 9; 57 and 9; 67 and 9; 77 and 9;
87 and 9; 97 and 9?

40. How many are 9 and 7; 19 and 7; 29 and 7;

89 and 7; 49 and 7; 59 and 7; 69 and 7; 79 and 7;
89 and 7; 99 and 7?

41. How many are 9 and 2; 19 and 2; 29 and 2;
39 and 2; 49 and 2; 59 and 2; 69 and 2; 79 and 2;
89 and 2; 99 and 2?

42. How many are 9 and 5; 19 and 5; 29 and 5;
39 and 5; 49 and 5; 59 and 5; 69 and 5; 79 and 5;
89 and 5; 99 and 5?

43. How many are 9 and 3; 19 and 3; 29 and 3;
39 and 3; 49 and 3; 59 and 3; 69 and 3; 79 and 3;
89 and 3; 99 and 3?

44. How many are 9 and 9; 19 and 9; 29 and 9;
39 and 9; 49 and 9; 59 and 9; 69 and 9; 79 and 9;
89 and 9; 99 and 9?

45. How many are 9 and 6; 19 and 6; 29 and 6;
39 and 6; 49 and 6; 59 and 6; 69 and 6; 79 and 6;
89 and 6; 99 and 6?

46. How many are 9 and 8; 19 and 8; 29 and 8;
39 and 8; 49 and 8; 59 and 8; 69 and 8; 79 and 8;
89 and 8; 99 and 8?

47. How many are 3 and 10; 13 and 10; 23 and 10;
33 and 10; 43 and 10; 53 and 10; 63 and 10; 73
and 10; 83 and 10; 93 and 10?

48. How many are 7 and 10; 17 and 10; 27 and
10; 37 and 10; 47 and 10; 57 and 10; 67 and 10;
77 and 10; 87 and 10; 97 and 10?

49. How many are 9 and 10; 19 and 10; 29 and
10; 39 and 10; 49 and 10; 59 and 10; 69 and 10;
79 and 10; 89 and 10; 99 and 10?

50. How many are 2 and 11; 12 and 11; 22 and 11; 32 and 11; 42 and 11; 52 and 11; 62 and 11; 72 and 11; 82 and 11; 92 and 11?

51. How many are 3 and 12; 13 and 12; 23 and 12; 33 and 12; 43 and 12; 53 and 12; 63 and 12; 73 and 12; 83 and 12; 93 and 12?

52. How many are 7 and 12; 17 and 12; 27 and 12; 37 and 12; 47 and 12; 57 and 12; 67 and 12; 77 and 12; 87 and 12; 97 and 12?

9. MISCELLANEOUS EXAMPLES.

1. What numbers make 8? *Ans.* 1 and 7; 7 and 1; 2 and 6; 6 and 2; 3 and 5; 5 and 3; 2 fours; 4 twos; 2 threes and 2; 2 threes and 2 ones; 2 twos and 4 ones; 2 and 3 and 3 ones.

2. What numbers make 2? Then what numbers can you take from 2, and how many will be left each time?

3. What numbers make 3? What numbers can you take from 3, and how many will be left each time?

4. What numbers make 4? What numbers can you take from 4, and how many will be left each time?

5. What numbers make 5? What numbers can you take from 5, and how many will be left after each subtraction?

6. What numbers make 6? What numbers can you take from 6, and how many will be left after each subtraction?

7. *What numbers make 7?* What numbers can you

take from 7, and how many will be left after each subtraction?

8. What numbers make 9? What numbers can you take from 9, and how many will be left after each subtraction?

9. What numbers make 10? What numbers can you take from 10, and how many will be left after each subtraction?

10. What numbers make 11? What numbers can you take from 11, and how many will be left after each subtraction?

11. What numbers make 12? What numbers can you take from 12, and how many will be left after each subtraction?

12. What numbers make 13? What numbers can you take from 13, and how many will be left after each subtraction?

13. What numbers make 14? What numbers can you take from 14, and how many will be left after each subtraction?

14. What numbers make 15? What numbers can you take from 15, and how many will be left after each subtraction?

15. What numbers make 16? What numbers can you take from 16, and how many will be left after each subtraction?

16. What numbers make 17? What numbers can you take from 17, and how many will be left after each subtraction?

17. What numbers make 18? What numbers can you take from 18, and how many will be left after each subtraction?

18. What numbers make 19? What numbers can you take from 19, and how many will be left after each subtraction?

19. What numbers make 20? What numbers can you take from 20, and how many will be left after each subtraction?

20. What numbers make 21? What numbers can you take from 21, and how many will be left after each subtraction?

21. How many are 13 and 2; 14 and 1; 13 and 3; 14 and 2; 15 and 1; 13 and 4; 14 and 3; 15 and 2; 16 and 1; 13 and 5; 14 and 4; 15 and 3; 16 and 2; 17 and 1; 13 and 6; 14 and 5; 15 and 4; 16 and 3; 17 and 2; 18 and 1; 13 and 7; 14 and 6; 15 and 5; 16 and 4; 17 and 3; 18 and 2; 19 and 1?

22. How many are 20 less 1; 20 less 2; 20 less 3; 20 less 4; 20 less 5; 20 less 6; 20 less 7; 19 less 1; 19 less 2; 19 less 3; 19 less 4; 19 less 5; 19 less 6; 18 less 1; 18 less 2; 18 less 3; 18 less 4; 18 less 5; 17 less 1; 17 less 2; 17 less 3; 17 less 4; 16 less 1; 16 less 2; 16 less 3; 15 less 1; 15 less 2; 14 less 1?

23. How many are 21 and 8; 31 and 9; 41 and 2; 51 and 3; 61 and 7; 71 and 6; 81 and 1; 91 and 4; 11 and 5; 71 and 10?

24. How many are 12 and 7; 22 and 8; 32 and 9; 42 and 6; 52 and 5; 62 and 4; 72 and 3; 82 and 2; 92 and 1; 32 and 10?

25. How many are 13 and 1; 23 and 2; 33 and 3; 43 and 4; 53 and 5; 63 and 6; 73 and 7; 83 and 8; 93 and 9; 83 and 10?

26. How many are 14 and 6; 24 and 5; 34 and 4; 44 and 3; 54 and 2; 64 and 1; 74 and 7; 84 and 9; 94 and 8; 44 and 10?

27. How many are 15 and 7; 25 and 1; 35 and 5; 45 and 6; 55 and 2; 65 and 4; 75 and 8; 85 and 3; 95 and 9; 5 and 10?

28. How many are 6 and 8; 26 and 6; 16 and 9; 36 and 1; 46 and 3; 56 and 10; 66 and 2; 76 and 4; 86 and 7; 96 and 5?

29. How many are 47 and 9; 37 and 8; 27 and 7; 17 and 6; 7 and 5; 57 and 1; 67 and 2; 77 and 3; 87 and 4; 97 and 10?

30. How many are 8 and 10; 18 and 1; 28 and 3; 38 and 5; 48 and 7; 58 and 2; 68 and 4; 78 and 9; 88 and 6; 98 and 8?

31. How many are 19 and 1; 29 and 4; 39 and 7; 49 and 10; 59 and 3; 69 and 6; 79 and 9; 89 and 2; 99 and 5; 79 and 8?

32. How many are 2 and 3 and 4; 2 and 4 and 3; 3 and 2 and 4; 3 and 4 and 2; 4 and 2 and 3; 4 and 3 and 2; 5 and 1 and 7; 5 and 7 and 1; 7 and 1 and 5; 7 and 5 and 1; 1 and 5 and 7; 1 and 7 and 5?

33. How many are 9 less 2; 9 less 3; 9 less 4; 13 less 1; 13 less 5; 13 less 7?

34. How many are 12 and 5 and 3; 12 and 3 and

5; 3 and 12 and 5; 3 and 5 and 12; 5 and 12 and 3; 5 and 3 and 12; 27 and 1 and 4; 27 and 4 and 1; 4 and 1 and 27; 4 and 27 and 1; 1 and 27 and 4; 1 and 4 and 27?

35. How many are 20 less 12; 20 less 5; 20 less 3; 32 less 1; 32 less 4; 32 less 27?

36. How many are 31 and 3 and 6; 31 and 6 and 3; 6 and 31 and 3; 6 and 3 and 31; 3 and 31 and 6; 3 and 6 and 31; 42 and 5 and 2; 42 and 2 and 5; 2 and 42 and 5; 2 and 5 and 42; 5 and 42 and 2; 5 and 2 and 42?

37. How many are 40 less 3; 40 less 6; 40 less 31; 40 less 37; 40 less 34; 40 less 9; 49 less 2; 49 less 5; 49 less 42; 49 less 44; 49 less 47; 49 less 7?

38. How many are 53 and 8 and 7; 53 and 7 and 8; 7 and 53 and 8; 7 and 8 and 53; 8 and 7 and 53; 8 and 53 and 7; 64 and 4 and 6; 64 and 6 and 4; 4 and 64 and 6; 4 and 6 and 64; 6 and 4 and 64; 6 and 64 and 4?

39. How many are 68 less 7; 68 less 8; 68 less 53; 68 less 60; 68 less 61; 68 less 15; 74 less 4; 74 less 6; 74 less 64; 74 less 68; 74 less 70; 74 less 10?

40. How many are 73 and 3 and 9; 73 and 9 and 3; 9 and 73 and 3; 9 and 3 and 73; 3 and 9 and 73; 3 and 73 and 9; 85 less 3; 85 less 9; 85 less 73; 85 less 76; 85 less 82; 85 less 12?

10. ADDITION.—CONTINUED.

1. *How many tens are 7 tens and 5 tens and 8 tens;*

6 tens and 3 tens and 9 tens; 2 tens and 5 tens and 4 tens and 7 tens; 3 tens and 3 tens and 9 tens; 8 tens and 8 tens and 7 tens?

2. How many hundreds are 1 hundred and 4 hundreds and 7 hundreds; 6 hundreds and 5 hundreds and 3 hundreds; 9 hundreds and 2 hundreds and 9 hundreds; 8 hundreds and 7 hundreds and 6 hundreds?

3. How many thousands are 4 thousands and 5 thousands and 7 thousands and 4 thousands; 2 thousands and 3 thousands and 4 thousands and 5 thousands; 6 thousands and 6 thousands and 6 thousands; 5 thousands and 8 thousands and 5 thousands and 8 thousands?

4. How many halves are 7 halves and 5 halves and 3 halves and 2 halves; 4 halves and 4 halves and 9 halves; 9 halves and 8 halves and 6 halves; 3 halves and 3 halves and 6 halves and 6 halves; 2 halves and 8 halves and 1 half and 7 halves?

5. How many ounces are 3 ounces and 7 ounces and 9 ounces; 4 ounces and 6 ounces and 8 ounces; 5 ounces and 5 ounces and 5 ounces and 6 ounces; 7 ounces and 7 ounces and 6 ounces and 8 ounces?

6. How many pounds are 5 pounds and 7 pounds and 9 pounds; 4 pounds and 6 pounds and 8 pounds; 3 pounds and 7 pounds and 12 pounds; 2 pounds and 6 pounds and 9 pounds?

7. How many fifths are 1 fifth and 7 fifths and 3 fifths and 2 fifths; 4 fifths and 4 fifths and 8 fifths; 7

fifths and 6 fifths and 7 fifths ; 2 fifths and 9 fifths and 8 fifths and 7 fifths ?

8. Seven days make one week. How many days are there in 1 week and 1 week ; in 1 week and 6 days ; in 1 week and 4 days ; in 1 week and 1 week and 5 days ; in 1 week and 1 week and 3 days ; in 1 week and 1 week and 1 week ; in 4 weeks ; in 4 weeks and 2 days ?

9. Thirty days make one month.* How many days are there in 1 month and 1 week ; in 1 month and 2 weeks ; in 1 month and 2 weeks and 6 days ; in 1 month and 2 weeks and 3 days ; in 1 month and 2 weeks and 5 days ; in 1 month and 3 weeks and 4 days ?

10. Twelve months make one year. How many months are there in 1 year and 7 months ; in 1 year and 5 months ; in 1 year and 3 months ; in 1 year and 6 months ; in 1 year and 8 months ; in 1 year and 11 months ; in 1 year and 9 months ; in 2 years ; in 3 years ?

11. Three feet make one yard. How many feet in 2 yards ; in 3 yards ; in 4 yards and 1 foot ; in 5 yards

* Four weeks is sometimes called a month. At Banks, thirty days is considered as a month. The year consists of twelve calendar months, the lengths of which may be learned from the following couplets :

Thirty days have September,
April, June, and November ;
All the rest have thirty-one,
Except February alone,
Which hath but twenty-eight in fine,
Till Leap Year gives it twenty-nine.

and 2 feet; in 6 yards; in 3 yards and 2 feet; in 2 yards and 1 foot; in 4 yards and 2 feet?

11. NOTATION.

1. Write each of the following numbers in figures, on your slate: eleven; seventeen; thirteen; twelve; nineteen; twenty-five; thirty; seven; ten; fourteen.

2. Write each of the following numbers in figures: twenty; thirty-three; sixty-two; ninety-five; fifteen; forty-nine; fifty-seven; eighty-three; twenty-one; sixteen.

3. Write each of the following numbers in figures: ninety; eighty-eight; sixty-one; forty-seven; fifty-five; twenty-two; eighteen; twenty-three; seventy; ninety-one.

4. Write each of the following numbers in figures: ninety-two; eighty-one; seventy-three; sixty-five; thirty-seven; twenty-nine; fifty-four; forty-six; ninety-eight; one hundred.

5. Write each of the following numbers in figures: one hundred and one; three hundred and seven; two hundred and ten; five hundred and two; four hundred and six; eight hundred and three; three hundred and eleven; one hundred and nine; seven hundred and four; nine hundred and five.

6. Write each of the following numbers in figures: two hundred and thirteen; seven hundred and twenty; one hundred and forty-five; five hundred and eight; nine hundred and fourteen; four hundred and nine-

teen ; one hundred and forty-nine ; one hundred and ninety-four ; nine hundred and forty-one ; four hundred and ninety-one.

7. Write each of the following numbers in figures : seven hundred and nine ; three hundred and ten ; nine hundred and forty ; one hundred and eleven ; six hundred and sixty-six ; four hundred and thirteen ; eight hundred and three ; seven hundred and seventy-five ; five hundred and four ; nine hundred and thirty.

8. Write each of the following numbers in figures : three hundred and three ; three hundred and thirty ; eight hundred and seventeen ; one hundred and seventy-eight ; seven hundred and eighty-one ; nine hundred and forty ; six hundred and eleven ; two hundred and sixty ; six hundred and twelve ; four hundred and ninety-two.

9. Write each of the following numbers in figures : nine hundred and nine ; four hundred and ten ; eight hundred and thirteen ; two hundred and fifty-six ; five hundred and thirty ; seventy-three ; eight hundred and four ; nine hundred and fifty ; seven hundred and seventeen ; seven hundred and seventy-one.

10. Write each of the following numbers in figures : one hundred and thirty-seven ; seven hundred and thirteen ; three hundred and seventeen ; seven hundred and eight ; eight hundred and seventy ; seven hundred and seventy-six ; one hundred and twelve ; one hundred and forty-four ; five hundred and twenty-nine ; nine hundred and fifty-two.

[The teacher may extend these examples indefinitely.]

12. ADDITION.—CONTINUED.

1. The distance from Washington to Bladensburg^a is 6 miles, from Bladensburg to Beltsville 6 miles, from Beltsville to Patuxent River 4 miles, from Patuxent River to Elkbridge Landing 14 miles, from Elkbridge to Baltimore 10 miles. What is the distance from Washington to Baltimore?

2. The distance from Baltimore to Havre-de-Grace is 37 miles, from Havre-de-Grace to Charleston 6 miles, from Charleston to Elkton 9 miles, from Elkton to Newark 6 miles, from Newark to Stanton 6 miles, from Stanton to Wilmington 6 miles, from Wilmington to Marcus Hook 10 miles, from Marcus Hook to Chester 3 miles, from Chester to Philadelphia 14 miles. What is the distance from Baltimore to Philadelphia?

3. The distance from Philadelphia to Bristol is 20 miles, from Bristol to Trenton 10 miles, from Trenton to Princeton 10 miles, from Princeton to New Brunswick 18 miles, from New Brunswick to Rahway 12 miles, from Rahway to Elizabethtown 5 miles, from Elizabethtown to Newark 5 miles, from Newark to New York 9 miles. What is the distance from Philadelphia to New York?

4. The distance from New York to New London is 115 miles, from New London to Norwich 16 miles, from Norwich to Plainfield 16 miles, from Plainfield to Danielsonville 9 miles, from Danielsonville to Pomfret 8

^a The distances are given on the authority of *Phelps's Traveler's Guide*.

miles, from Pomfret to Webster 10 miles, from Webster to Oxford 5 miles, from Oxford to Worcester 11 miles. What is the distance from New York to Worcester?

5. The distance from Worcester to Grafton is 7 miles, from Grafton to Westboro' 5 miles, from Westboro' to Southboro' 4 miles, from Southboro' to Ashland 4 miles, from Ashland to Framingham 8 miles, from Framingham to Natick 4 miles, from Natick to Needham 4 miles, from Needham to Newton 4 miles, from Newton to Brighton 4 miles, from Brighton to Boston 5 miles. What is the distance from Worcester to Boston?

6. The distance from Boston to Lynn is 9 miles, from Lynn to Salem 5 miles, from Salem to Beverly 2 miles, from Beverly to Wenham 4 miles, from Wenham to Ipswich 5 miles, from Ipswich to Rowley 4 miles, from Rowley to Newburyport 5 miles, from Newburyport to Seabrook 6 miles, from Seabrook to Hampton 8 miles, from Hampton to Portsmouth 10 miles. What is the distance from Boston to Portsmouth?

7. The distance from Portsmouth to South Berwick is 12 miles, from South Berwick to North Berwick 5 miles, from North Berwick to Wells 5 miles, from Wells to Kennebunk 6 miles, from Kennebunk to Saco 10 miles, from Saco to Scarborough' 8 miles, from Scarborough' to Portland 5 miles. What is the distance from Portsmouth to Portland? From Boston to Portland?

8. The distance from Portland to Augusta is 65 miles, from Augusta to Vassalboro' 5 miles, from Vassalboro'

to East Vassalboro' 6 miles, from East Vassalboro' to China 7 miles, from China to Albion 5 miles, from Albion to Troy 13 miles, from Troy to Newburg 12 miles, from Newburg to Hampden 10 miles, from Hampden to Bangor 5 miles. What is the distance from Portland to Bangor? From Washington to Bangor?

9. The distance from Washington to Alexandria is 8 miles, from Alexandria to Mount Vernon 8 miles, from Mount Vernon to Fredericksburg 42 miles, from Fredericksburg to Milford Depot 22 miles, from Milford Depot to Ruther Glen 10 miles, from Ruther Glen to Taylorsville 10 miles, from Taylorsville to Richmond 21 miles. What is the distance from Washington to Richmond?

10. The distance from Richmond to Manchester is 2 miles, from Manchester to Petersburg 20 miles, from Petersburg to Jarrett's 30 miles, from Jarrett's to Pleasant Hill 20 miles, from Pleasant Hill to Gareysburg 9 miles, from Gareysburg to Weldon 5 miles. What is the distance from Richmond to Weldon? From Washington to Weldon?

13. ADDITION AND SUBTRACTION.—CONTINUED.

1. 8 and 9 and 6 and 4 less 7 are how many?
2. 4 and 10 and 7 and 8 and 6 less 3 are how many?
3. 27 and 5 and 9 and 4 and 2 less 10 are how many?
4. 36 and 4 and 11 and 2 and 8 less 1 are how many?

5. 41 and 9 and 8 and 7 and 6 less 5 are how many?

6. 55 and 12 and 4 and 3 and 5 less 9 are how many?

7. 62 and 5 and 5 and 5 and 5 less 12 are how many?

8. 79 and 4 and 4 and 3 and 3 less 8 are how many?

9. 80 and 20 and 10 and 5 and 6 less 11 are how many?

10. 93 and 7 and 9 and 4 and 2 less 8 are how many?

11. 97 and 3 and 4 and 9 and 8 less 2 are how many?

12. 33 and 4 and 4 and 8 and 8 less 6 are how many?

13. 25 and 7 and 7 and 5 and 9 less 4 are how many?

14. 18 and 10 and 5 and 9 and 3 less 7 are how many?

15. 7 and 47 and 4 and 8 and 2 less 1 are how many?

16. 59 and 3 and 6 and 2 and 8 less 9 are how many?

17. 66 and 4 and 4 and 7 and 5 less 2 are how many?

18. 70 and 19 and 2 and 9 and 1 less 5 are how many?

19. 88 and 1 and 7 and 6 and 4 less 8 are how many?

20. 94 and 2 and 5 and 8 and 10 less 9 are how many?

21. 4 tens and 5 tens are how many tens?

22. 40 and 50 are how many?

23. 4 tens from 9 tens leave how many tens? 5 tens from 9 tens leave how many tens?

24. 40 from 90 leave how many? 50 from 90 leave how many?

25. 8 tens and 3 tens are how many tens?

26. 80 and 30 are how many?

27. 11 tens less 3 tens are how many tens? 11 tens less 8 tens are how many tens?

28. 110 less 30 are how many? 110 less 80 are how many?

29. 6 tens and 2 tens are how many tens?

30. 60 and 20 are how many?

31. 8 tens less 6 tens are how many tens? 8 tens less 2 tens are how many tens?

32. 80 less 60 are how many? 80 less 20 are how many?

33. 5 tens and 7 tens are how many tens?

34. 50 and 70 are how many?

35. 12 tens less 5 tens are how many tens? 12 tens less 7 tens are how many tens?

36. 120 less 50 are how many? 120 less 70 are how many?

37. 9 tens and 4 tens are how many tens?
38. 90 and 40 are how many?
39. 13 tens less 9 tens are how many? 13 tens less 4 tens are how many?
40. 130 less 90 are how many? 130 less 40 are how many?
41. 8 tens and 7 tens are how many tens?
42. 80 and 70 are how many?
43. 8 tens from 15 tens leave how many? 7 tens from 15 tens leave how many?
44. 80 from 150 leave how many? 70 from 150 leave how many?
45. 7 tens and 9 tens are how many tens?
46. 70 and 90 are how many?
47. 7 tens from 16 tens leave how many? 9 tens from 16 tens leave how many?
48. 70 from 160 leave how many? 90 from 160 leave how many?
49. 8 tens and 9 tens are how many tens?
50. 80 and 90 are how many?
51. 17 tens less 8 tens are how many? 17 tens less 9 tens are how many?
52. 170 less 80 are how many? 170 less 90 are how many?
53. 5 tens and 6 tens are how many tens?
54. 50 and 60 are how many?
55. 5 tens from 11 tens leave how many? 6 tens from 11 tens leave how many?

56. 50 from 110 leave how many? 60 from 110 leave how many?

57. 6 tens and 4 tens are how many tens?

58. 60 and 40 are how many?

59. What is the difference between 10 tens and 6 tens? 10 tens and 4 tens?

60. What is the difference between 100 and 60? 100 and 40?

61. 8 tens and 5 tens are how many tens?

62. 80 and 50 are how many?

63. What is the difference between 13 tens and 8 tens? 13 tens and 5 tens?

64. What is the difference between 130 and 80? 130 and 50?

65. 9 tens and 6 tens are how many tens?

66. 90 and 60 are how many?

67. 9 tens from 15 tens leave how many? 6 tens from 15 tens leave how many?

68. 90 from 150 leave how many? 60 from 150 leave how many?

69. 8 tens and 6 tens are how many tens?

70. 80 and 60 are how many?

71. 14 tens less 8 tens are how many? 14 tens less 6 tens are how many?

72. 140 less 80 are how many? 140 less 60 are how many?

73. 5 tens and 9 tens are how many tens?

74. 50 and 90 are how many?

75. What is the difference between 14 tens and 5 tens? 14 tens and 9 tens?

76. What is the difference between 140 and 50? 140 and 90?

77. 7 tens and 6 tens are how many tens?

78. 70 and 60 are how many?

79. What is the difference between 6 tens and 13 tens? 7 tens and 13 tens?

80. What is the difference between 60 and 130? 70 and 130?

81. How many are 40 and 80?

14. MULTIPLICATION.

1. There are 2 bones in each thumb. How many are there in both thumbs? How many are 2 times 2?

2. How many legs have 2 bipeds? 3 birds? 4 men? 5 men? 6 birds? 7 birds? 8 birds?

3. How many are 2 times 1; 2 times 2; 2 times 3; 2 times 4; 2 times 5; 2 times 6; 2 times 7; 2 times 8; 2 times 9; 2 times 10?

4. What is 2 times 4 feet? 2 times 4 yards? 2 times 4 units? 2 times 4 hundreds? 2 times 4 fifths? 2 times 4 eighths? 2 times 4 tens?

5. There are 3 bones in each finger. How many are there in 2 fingers? In 3 fingers? In 4 fingers? In 5 fingers? In 6 fingers? In 7 fingers? In 8 fingers?

6. How many are 3 times 1; 3 times 2; 3 times 3; 3 times 4; 3 times 5; 3 times 6; 3 times 7; 3 times 8?

7. What is 3 times 2 apples? 3 times 2 books? 3 times 2 boys? 3 times 2 lessons? 3 times 2 halves? 3 times 2 tens? 3 times 2 thousands?

8. How many feet are there in 2 yards? In 3 yards? In 4 yards? In 5 yards? In 5 yards and 1 foot? In 5 yards and two feet?

9. How many halves are there in 1 whole? In 2 wholes? In 3 wholes? In 4 wholes? In 5 wholes? In 5 wholes and 1 half?

10. If half a yard of tape costs 1 cent, how much does a yard cost? 2 yards? 3 yards? 4 yards? 5 yards? 6 yards?

11. There are 4 quarts in one gallon. How many quarts are there in 2 gallons? In 3 gallons? In 3 gallons and 1 quart? In 3 gallons and 2 quarts?

12. If you can learn 2 lessons in a quarter of a day, how many could you learn in a whole day?

13. Four gills make 1 pint, and 2 pints make 1 quart. How many gills are there in 1 quart? In 3 quarts? 5 quarts? 11 quarts? 7 quarts? 9 quarts? 8 quarts? In 1 gallon? 3 gallons?

14. How many pints are there in 1 gallon? 7 gallons? 3 gallons? 10 gallons? 6 gallons? 8 gallons? 4 gallons? 9 gallons?

15. If 1 gill of molasses costs 2 cents, what will be the cost of 1 pint? Of 1 quart? 3 quarts? 5 quarts? 6 quarts? 1 gallon?

16. If 1 pint of molasses costs 3 cents, what will be the cost of 1 gallon? 2 gallons? 3 gallons? Of 2

quarts? 6 quarts? 10 quarts? 2 gallons and 3 quarts?

17. If the interest of 1 dollar is 5 cents a year, what would be the interest of 7 dollars for a year? Of 3 dollars? 6 dollars? 12 dollars? 8 dollars? 5 dollars? 9 dollars?

18. If the interest of 1 dollar is 7 cents a year, what would be the interest of 1 dollar for 2 years? For 4 years? 9 years? 6 years? 8 years? 7 years? 3 years? 12 years?

19. If the interest of 1 dollar is 6 cents for 1 year, what would be the interest of 2 dollars for 1 year? 2 dollars for 2 years? 3 dollars for 1 year? 3 dollars for 3 years? 5 dollars for 2 years? 4 dollars for 3 years?

20. If the postage of 1 letter is 5 cents, what would be the postage of 5 letters? Of 2 letters? 8 letters? 12 letters? 9 letters? 7 letters?

21. How many feet in 3 yards and 2 feet? In 9 yards and 1 foot? 7 yards? 12 yards and 2 feet? 8 yards and 2 feet? 6 yards and 2 feet? 4 yards? 10 yards and 1 foot? 5 yards and 1 foot?

22. How many inches in 3 feet and 6 inches? 3 feet and 8 inches? 3 feet and 4 inches? 9 feet? 8 feet and 4 inches? 7 feet and 3 inches? 5 feet and 5 inches? 12 feet? 11 feet and 1 inch?

23. How many cents in 9 dimes and 7 cents? 6 dimes and 3 cents? 10 dimes and 7 cents? 6 dimes and 5 cents? 8 dimes and 8 cents? 7 dimes and 7 cents? 40 dimes and 3 cents?

24. How many are 2 times 1; 2 times 2; 2 times 3; 2 times 4; 2 times 5; 2 times 6; 2 times 7; 2 times 8; 2 times 9; 2 times 10; 2 times 11; 2 times 12?

25. How many are 3 times 1; 3 times 2; 3 times 3; 3 times 4; 3 times 5; 3 times 6; 3 times 7; 3 times 8; 3 times 9; 3 times 10; 3 times 11; 3 times 12?

26. How many are 4 times 1; 4 times 2; 4 times 3; 4 times 4; 4 times 5; 4 times 6; 4 times 7; 4 times 8; 4 times 9; 4 times 10; 4 times 11; 4 times 12?

27. How many are 5 times 1; 5 times 2; 5 times 3; 5 times 4; 5 times 5; 5 times 6; 5 times 7; 5 times 8; 5 times 9; 5 times 10; 5 times 11; 5 times 12?

28. How many are 6 times 1; 6 times 2; 6 times 3; 6 times 4; 6 times 5; 6 times 6; 6 times 7; 6 times 8; 6 times 9; 6 times 10; 6 times 11; 6 times 12?

29. How many are 7 times 1; 7 times 2; 7 times 3; 7 times 4; 7 times 5; 7 times 6; 7 times 7; 7 times 8; 7 times 9; 7 times 10; 7 times 11; 7 times 12?

30. How many are 8 times 1; 8 times 2; 8 times 3; 8 times 4; 8 times 5; 8 times 6; 8 times 7; 8 times 8; 8 times 9; 8 times 10; 8 times 11; 8 times 12?

31. How many are 9 times 1; 9 times 2; 9 times 3; 9 times 4; 9 times 5; 9 times 6; 9 times 7;

9 times 8; 9 times 9; 9 times 10; 9 times 11; 9 times 12?

32. How many are 10 times 1; 10 times 2; 10 times 3; 10 times 4; 10 times 5; 10 times 6; 10 times 7; 10 times 8; 10 times 9; 10 times 10; 10 times 11; 10 times 12?

33. How many are 11 times 1; 11 times 2; 11 times 3; 11 times 4; 11 times 5; 11 times 6; 11 times 7; 11 times 8; 11 times 9; 11 times 10; 11 times 11; 11 times 12?

34. How many are 12 times 1; 12 times 2; 12 times 3; 12 times 4; 12 times 5; 12 times 6; 12 times 7; 12 times 8; 12 times 9; 12 times 10; 12 times 11; 12 times 12?

35. 2 times 2 are how many times 1? 3 times 3 are how many times 1? 2 times 4 are how many times 1? 4 times 2 are how many times 1? 4 times 4 are how many times 1?

15. MULTIPLICATION.—CONTINUED.

1. How many are 8 times 2; 3 times 2; 5 times 2; 10 times 2; 7 times 2; 9 times 2; 4 times 2; 2 times 2; 12 times 2; 6 times 2; 11 times 2?

2. How many are 6 times 3; 3 times 3; 5 times 3; 10 times 3; 7 times 3; 9 times 3; 4 times 3; 2 times 3; 12 times 3; 8 times 3; 11 times 3?

3. How many are 6 times 4; 3 times 4; 5 times 4; 10 times 4; 7 times 4; 9 times 4; 4 times 4; 2 times 4; 12 times 4; 8 times 4; 11 times 4?

4. How many are 6 times 5; 3 times 5; 5 times 5;

10 times 5; 7 times 5; 9 times 5; 4 times 5; 2 times 5; 12 times 5; 8 times 5; 11 times 5?

5. How many are 6 times 6; 3 times 6; 5 times 6; 10 times 6; 7 times 6; 9 times 6; 4 times 6; 2 times 6; 12 times 6; 8 times 6; 11 times 6?

6. How many are 6 times 7; 3 times 7; 5 times 7; 10 times 7; 7 times 7; 9 times 7; 4 times 7; 2 times 7; 12 times 7; 8 times 7; 11 times 7?

7. How many are 6 times 8; 3 times 8; 5 times 8; 10 times 8; 7 times 8; 9 times 8; 4 times 8; 2 times 8; 12 times 8; 8 times 8; 11 times 8?

8. How many are 6 times 9; 3 times 9; 5 times 9; 10 times 9; 7 times 9; 9 times 9; 4 times 9; 2 times 9; 12 times 9; 8 times 9; 11 times 9?

9. How many are 6 times 10; 3 times 10; 5 times 10; 10 times 10; 7 times 10; 9 times 10; 4 times 10; 2 times 10; 12 times 10; 8 times 10; 11 times 10?

10. How many are 6 times 11; 3 times 11; 5 times 11; 10 times 11; 7 times 11; 9 times 11; 4 times 11; 2 times 11; 12 times 11; 8 times 11; 11 times 11?

11. How many are 6 times 12; 3 times 12; 5 times 12; 10 times 12; 7 times 12; 9 times 12; 4 times 12; 2 times 12; 12 times 12; 8 times 12; 11 times 12?

12. How many are 8 times 4; 7 times 2; 2 times 7; 4 times 8; 6 times 3; 3 times 6; 5 times 5; 2 times 11; 11 times 2; 8 times 9; 9 times 8; 10 times 10?

13. How many are 5 times 4; 4 times 5; 6 times 3; 3 times 6; 2 times 9; 9 times 2?

14. How many are 2 times 8; 3 times 2; 6 times 2; 2 times 6; 3 times 7; 7 times 3?

15. How many are 9 times 8; 8 times 9; 7 times 6; 6 times 7; 3 times 5; 5 times 3?

16. How many are 3 times 7; 7 times 3; 6 times 4; 4 times 6; 5 times 9; 9 times 5?

17. How many are 4 times 9; 9 times 4; 6 times 8; 8 times 6; 7 times 5; 5 times 7?

18. How many are 6 times 5; 5 times 6; 7 times 9; 9 times 7; 9 times 6; 6 times 9?

19. 2 times 9 tens are how many tens? How many are 2 times 90; 90 times 2?

20. 6 times 3 tens are how many tens? How many are 6 times 30; 30 times 6?

21. 3 times 5 tens are how many tens? How many are 3 times 50; 50 times 3?

22. 8 times 3 tens are how many tens? How many are 8 times 30; 30 times 8?

23. 4 times 6 tens are how many tens? How many are 4 times 60; 60 times 4?

24. 6 times 4 tens are how many tens? How many are 6 times 40; 40 times 6?

25. 2 times 6 tens are how many tens? How many are 2 times 60; 60 times 2?

26. 6 times 2 tens are how many tens? How many are 6 times 20; 20 times 6?

27. 4 times 3 tens are how many tens? How many are 4 times 30; 30 times 4?

28. 3 times 4 tens are how many tens? How many are 3 times 40; 40 times 3?

29. 4 times 4 tens are how many tens? How many are 4 times 40; 40 times 4?

30. 8 times 2 tens are how many tens? How many are 8 times 20; 20 times 8?

31. 2 times 8 tens are how many tens? How many are 2 times 80; 80 times 2?

32. 7 times 2 tens are how many tens? How many are 7 times 20; 20 times 7?

33. 2 times 7 tens are how many tens? How many are 2 times 70; 70 times 2?

34. What is the difference between 4 times 5 tens and 5 times 4 tens?

35. What is the difference between 4 times 50 and 5 times 40?

36. Which is the larger, 4 times 7 tens or 6 times 4 tens?

37. Which is the larger, 4 times 70 or 6 times 40?

38. How many are 3 times 90; 90 times 3; 9 times 30; 30 times 9?

39. How many are 4 times 80; 80 times 4; 8 times 40; 40 times 8?

40. How many are 5 times 20; 20 times 5; 2 times 50; 50 times 2?

41. How many are 9 times 40; 40 times 9; 4 times 90; 90 times 4?

42. How many are 5 times 60; 60 times 5; 6 times 50; 50 times 6?

43. How many are 7 times 90; 90 times 7; 9 times 70; 70 times 9?

44. How many are 8 times 50; 50 times 8; 5 times 80; 80 times 5?

45. How many are 6 times 70; 70 times 6; 7 times 60; 60 times 7?

46. How many are 7 times 50; 50 times 7; 5 times 70; 70 times 5?

47. How many are 9 times 80; 80 times 9; 8 times 90; 90 times 8?

48. How many are 5 times 50; 60 times 6; 70 times 7; 8 times 80; 9 times 90?

49. How many are 2 times 20; 30 times 2; 40 times 2; 3 times 30; 80 times 6; 70 times 8; 60 times 9; 9 times 50?

16. ADDITION AND MULTIPLICATION.

1. Charlotte gave ten cents for a ruler, and four cents for an inkstand. How much did she give for both? How much must she give for two rulers and two inkstands?

2. 10 and 4 are how many? 2 times 10 and 2 times 4 are how many? 2 times 14 are how many?

3. If a slate costs ten cents, and a slate pencil costs one cent, how much will they both cost? How much would three slates and three pencils cost?

4. How many are 10 and 1; 3 times 10 and 3 times 1; 3 times 11?

5. A barrel of sugar is worth ten dollars, and a barrel of apples is worth two dollars. How much are

they both worth? How much would three barrels of sugar and three barrels of apples be worth?

6. Charles has twenty marbles in one pocket, and three in the other. How many has he in both? If he had four times as many, how many would he then have?

7. How many are 20 and 3; 4 times 20 and 4 times 3; 4 times 23?

8. How many are 5 times 3; 5 times 20; 5 times 3 and 5 times 20; 5 times 23?

9. Laura's father gave her ten cents, and her mother gave her six. How many did they both give her? If they had each given her six times as many, how many would she have had?

10. How many are 10 and 6; 6 times 10 and 6 times 6; 6 times 16?

11. Sixteen ounces make one pound Avoirdupois. How many ounces are there in six pounds; in 6 pounds and 1 ounce; 6 pounds and 2 ounces; 6 pounds and 4 ounces?

12. How many ounces are there in five pounds? In 5 pounds and 3 ounces; 5 pounds and 5 ounces; 5 pounds and 7 ounces; 5 pounds and 10 ounces?

13. How many ounces are there in eight pounds? In 8 pounds and 10 ounces; 8 pounds and 11 ounces; 8 pounds and 12 ounces; 8 pounds and 13 ounces?

14. How many ounces are there in ten pounds? In 10 pounds and 15 ounces?

15. Twelve inches make one foot. How many

inches are there in seven feet? In 7 feet and 1 inch; 7 feet and 2 inches; 7 feet and 3 inches; 7 feet and 6 inches?

16. How many inches are there in nine feet? In ten feet; 10 feet and 10 inches; 10 feet and 11 inches; 11 feet; 11 feet and 5 inches?

17. Twenty-four hours make one day. How many hours are there in five days? In 5 days and 6 hours; 5 days and 10 hours; 5 days and 12 hours; 5 days and 16 hours?

18. How many hours are there in eight days; 8 days and 1 hour; 8 days and 7 hours; 8 days and 23 hours; 9 days?

19. Thirty days make one month. How many days are there in three months; 3 months and 10 days; 3 months and 20 days; 3 months and 25 days; 3 months and 29 days?

20. How many days are there in seven months; 7 months and 11 days; 7 months and 21 days; 7 months and 29 days; 8 months?

21. Four quarts make one gallon. How many quarts are there in 15 gallons; 17 gallons and 3 quarts; 17 gallons and 1 quart?

22. How many quarts are there in 21 gallons; 24 gallons; 24 gallons and 2 quarts; 27 gallons and 1 quart?

23. If one ton of hay costs 14 dollars, how much will 5 tons cost; 6 tons; 7 tons?

24. *Thirty-two* quarts make one bushel. How many

quarts are there in 2 bushels; 3 bushels; 3 bushels and 10 quarts; 3 bushels and 20 quarts?

25. Sixty minutes make one hour. How many minutes are there in 4 hours; 6 hours; 7 hours and 10 minutes; 7 hours and 20 minutes; 7 hours and 40 minutes; 8 hours and 10 minutes?

26. How many are 5 times 17; 6 times 15; 7 times 13; 9 times 14; 8 times 14; 7 times 16; 5 times 19; 9 times 12; 6 times 18; 5 times 28; 3 times 37; 2 times 99; 9 times 22?

17. MULTIPLICATION.—CONTINUED.

1. How many farthings are there in 2 pence, there being 4 farthings in 1 penny? How many in 3 pence? In 7 pence? In 9 pence? In 6 pence? In 5 pence and 2 farthings? In 4 pence and 3 farthings?

MODEL.—In 2 pence there are 2 times as many farthings as in 1 penny. 2 times 4 are 8.

2. Twelve pence make 1 shilling. How many pence are there in 5 shillings? In 7 shillings? In 2 shillings? In 3 shillings and 6 pence? In 7 shillings and 8 pence?

3. Twelve inches make 1 foot. How many inches are there in 6 feet? In 4 feet? In 8 feet and 4 inches? In 10 feet and 9 inches?

4. Four gills make 1 pint. How many gills are there in 7 pints? In 5 pints? In 3 pints and 2 gills? In 6 pints and 1 gill? In 9 pints and 3 gills?

5. Two pints make 1 quart, and 4 quarts make 1 gallon. How many pints in 1 gallon? In 2 gallons?

In 5 gallons? In 7 gallons and 3 quarts? In 9 gallons and 1 pint? In 3 gallons, 3 quarts and 1 pint?

6. Eight furlongs make 1 mile. How many furlongs in 5 miles? In 2 miles and 7 furlongs? In 6 miles and 3 furlongs? In 9 miles and 5 furlongs?

7. If 2 men can do a piece of work in 4 days, in how many days can one man do it?

8. If 7 men can build a wall in 3 days, in how many days could one man build it?

9. If a stock of provisions serve 4 men 7 days, how long would it last 1 man?

10. If a stock of provisions would serve 9 men 8 days, how long would it last 1 man?

11. The usual interest of 1 dollar is 6 cents a year. At this rate what would be the annual interest of 5 dollars? Of 9 dollars? 3 dollars? 12 dollars? 6 dollars? 2 dollars? 10 dollars? 7 dollars? 4 dollars? 8 dollars? 11 dollars?

12. Sound moves through the air at the rate of 1 mile in 5 seconds.* In what time would it move 7 miles? 9 miles? 11 miles? 8 miles? 5 miles? 3 miles? 10 miles? 6 miles? 4 miles? 12 miles? 2 miles?

13. Sound moves 12 miles* in 1 minute. How far would it move in 2 minutes? In 7 minutes? In 3 minutes? In 10 minutes? In 8 minutes? In 4 minutes? In 9 minutes? In 11 minutes? In 6 minutes? In 12 minutes? In 5 minutes?

* Nearly.

14. A sheet folded so as to make 2 leaves, is called folio. How many leaves would there be in 9 sheets folio? In 12 sheets folio?

15. A sheet folded so as to make 4 leaves is called quarto. How many leaves would there be in 7 sheets quarto? In 12 sheets? In 9?

16. A sheet folded so as to make 8 leaves, is called octavo. How many leaves would there be in 5 sheets octavo? In 7 sheets? In 3? In 9? In 12? In 4? In 8? In 2? In 11? In 6? In 10?

17. A sheet folded so as to make 12 leaves is called duodecimo. How many leaves in 5 sheets duodecimo? In 9 sheets? In 12? In 8? In 6? In 11? In 7? In 3?

18. A sheet folded so as to make 16 leaves is called 16mo. How many leaves in 2 sheets 16mo.? In 4 sheets? In 8? In 10? In 7? In 11? In 6? In 3? In 5?

18. DIVISION.

1. If each of your steps measures 1 foot, how many steps will you take in going 7 feet? In going 11 feet? 5 feet? 1 yard? 4 yards? 7 yards and 2 feet?

2. How many couples would make 4? 8? 6? 12? 20? 10? 14? 24? 18? 22? 16?

3. How many yards are there in 6 feet? In 12 feet? 30 feet? 21 feet? 9 feet? 18 feet? 27 feet? 24 feet? 33 feet? 15 feet? 36 feet?

4. How many gallons are there in 8 quarts? In 20 quarts? 12 quarts? 32 quarts? 40 quarts? 16 quarts?

24 quarts? 44 quarts? 36 quarts? 28 quarts? 48 quarts?

5. How far does sound move in 10 seconds? In 20 seconds? 35 seconds? 55 seconds? 40 seconds? 30 seconds? 60 seconds? 15 seconds? 45 seconds? 25 seconds? 50 seconds?

6. A fathom is 6 feet. How many fathoms are there in 12 feet? In 24 feet? 42 feet? 54 feet? 18 feet? 30 feet? 60 feet? 36 feet? 66 feet? 48 feet? 72 feet?

7. How many weeks are there in 14 days? In 35 days? 56 days? 77 days? 21 days? 42 days? 63 days? 84 days? 49 days? 28 days? 70 days?

8. A peck is 8 quarts. How many pecks are there in 16 quarts? In 32 quarts? 48 quarts? 24 quarts? 80 quarts? 40 quarts? 96 quarts? 56 quarts? 72 quarts? 88 quarts? 64 quarts?

9. If a dog runs 9 miles an hour, in how many hours will he run 18 miles? 45 miles? 90 miles? 27 miles? 54 miles? 99 miles? 36 miles? 72 miles? 108 miles? 63 miles? 81 miles?

10. An eagle is worth 10 dollars. How many eagles are worth 20 dollars? 40 dollars? 70 dollars? 100 dollars? 30 dollars? 120 dollars? 90 dollars? 50 dollars? 110 dollars? 80 dollars? 60 dollars?

11. How many times is 2 contained in 12? In 16? 4? 20? 24? 18? 6? 10? 14? 8? 22?

12. How many times is 3 contained in 9? In 18? 27? 30? 36? 24? 33? 12? 6? 21? 15?

13. How many times is 4 contained in 8? 20? 32?
44? 12? 24? 48? 36? 16? 40? 28?

14. How many times is 5 contained in 10? 25? 40?
55? 15? 30? 60? 45? 20? 50? 35?

15. How many times is 6 contained in 12? 30? 48?
66? 18? 36? 72? 54? 24? 60? 42?

16. How many times is 7 contained in 14? 35?
56? 77? 21? 42? 84? 63? 28? 70? 49?

17. How many times is 8 contained in 16? 40?
64? 88? 24? 48? 96? 72? 32? 80? 56?

18. How many times is 9 contained in 27? 54?
90? 81? 36? 108? 18? 45? 63? 99? 72?

19. How many times is 10 contained in 40? 80?
30? 70? 100? 50? 20? 120? 60? 90? 110?

20. How many times is 11 contained in 44? 88?
33? 77? 110? 55? 22? 132? 66? 99? 121?

21. How many times is 12 contained in 36? 72?
120? 108? 48? 144? 24? 60? 84? 132? 96?

22. How many piles of 10 beans each could you
make, and how many would be left, if you had 37? 69?
83? 24? 50? 47? 81? 127? 56? 209? 85? 91?
902? 76? 33? 100? 48? 75?

23. How many piles of 100 beans each could you
make, and how many would be left, if you had 109?
263? 508? 927? 1150? 632? 430? 183? 909?
547? 754? 835? 1853?

24. If one yoker of oxen ploughs nine acres of
ground, how many yokes will plough 81 acres in the

MEN

quart

does

second

second

second

is 6

? In 2

60 feet

7 weeks

? 77 d.

? 49 day

8 quarts.

In 32 quai

quarts? 9

arts? 64 qu

ns 9 miles an

iles? 45 mil

iles? 36 miles

iles?

is worth 10 dollars

ollars? 40 dollars

llars? 120 dollars?

llars? 80 dollars? 6

y times is 2 contained in

3? 6? 10? 14? 8? 22?

y times is 3 contained in 6

4? 33? 12? 6? 21? 15?

1 quart? What

part of a quart is 1 gill? 3 gills? 6

9 Four quarts

make one gallon.

What part of a

quart is 1 pint? 5

quarts? 11 quarts?

10 How many pints

make one gallon? 5

of a pint is 1 pint? 5

pints? 16 pints?

11 How many gills

make one gallon? 128

of a gill is 1 gill? 7

gills? 17 gills? 29 gills? 32

12 Fifty seconds

make one minute.

What

part of a minute is 1 second? 5 seconds? 30 seconds?

13 How many minutes

make one hour? 60

minutes? 7 minutes? 11 minutes?

14 How many hours

make one day? 24

hours? 13 hours? 20 hours?

15 How many days

make one week? 7

days? 1 day? 5 days?

[ART. I.]

same time? How many will plough 45 acres? What is the quotient* of 81 divided by 9? 45 divided by 9?

25. What is the quotient of 60 divided by 6? 36 divided by 6? 70 divided by 7? 100 divided by 10? 80 divided by 10? 30 divided by 6? 20 divided by 2?

26. What is the quotient of 24 tens divided by 4? Of 24 tens divided by 4 tens?

27. What is the quotient of 240 divided by 4? 240 divided by 40?

28. What is the quotient of 18 tens divided by 6? 18 tens divided by 6 tens?

29. What is the quotient of 180 divided by 6? 180 divided by 60?

30. What is the quotient of 21 tens divided by 7? by 7 tens?

31. What is the quotient of 210 divided by 7? by 70?

32. What is the quotient of 25 tens divided by 5? by 5 tens?

33. What is the quotient of 250 divided by 5? by 50?

34. What is the quotient of 56 tens divided by 8? by 8 tens?

35. What is the quotient of 560 divided by 8? by 80?

19. FRACTIONS.

1. If we divide anything into two equal parts, one

* Explain the meaning of quotient.

of those parts is called a half. What is one-half of 2? One-half of 4? One-half of 4 apples? One-half of 6 men? One-half of 6 tenths?

2. If we divide anything into three equal parts, one of those parts is called one-third. What is one-third of 3? One-third of 6 boxes? One-third of 9 hundreds? One-third of 12 thousandths?

3. If we divide anything into four equal parts, one of those parts is called one-fourth. What is one-fourth of 4? One-fourth of 4 dogs? Two-fourths of 4 dogs? Three-fourths of 4 dogs? One-fourth of 8 tens? Two-fourths of 8 tens? Three-fourths of 8 tens?

4. If we divide anything into five equal parts, one of those parts is called one-fifth. What is one-fifth of 5? Two-fifths of 5? One-fifth of 10 books? Three-fifths of 10 books? One-fifth of 15 yards? Four-fifths of 15 yards?

5. What do you understand by one-sixth of anything? By one-seventh? One-eighth? One-ninth? One-tenth? One-eleventh? One-twelfth? One-sixteenth? One-twentieth? One-forty-fifth? One-hundredth?

6. What do you understand by two-sixths of anything? By five-sevenths? Four-eighths? Six-ninths? Three-tenths? Ten-elevenths? Seven-twelfths? Fifteen-sixteenths? Eight-twenty-sevenths? Thirteen-sixty-thirds?

7. Four gills make one pint. What part of a pint is 1 gill? 3 gills? 2 gills? 4 gills? 7 gills? 9 gills? 5 gills?

8. Two pints make 1 quart. How many gills make

1 quart? What part of a quart is 1 gill? 3 gills? 5 gills? 2 gills? 6 gills? 9 gills? 4 gills? 8 gills?

9. Four quarts make one gallon. What part of a gallon is 1 quart? 3 quarts? 4 quarts? 2 quarts? 7 quarts? 11 quarts? 15 quarts?

10. How many pints make one gallon? What part of a gallon is 1 pint? 5 pints? 8 pints? 4 pints? 7 pints? 2 pints? 16 pints? 27 pints?

11. How many gills make one gallon? What part of a gallon is 1 gill? 7 gills? 17 gills? 29 gills? 32 gills? 42 gills? 5 gills? 11 gills?

12. Sixty seconds make one minute. What part of a minute is 1 second? 5 seconds? 30 seconds? 27 seconds? 18 seconds? 52 seconds? 85 seconds?

13. Sixty minutes make one hour. What part of an hour is 1 minute? 7 minutes? 11 minutes? 45 minutes? 100 minutes? 215 minutes?

14. Twenty-four hours make one day. What part of a day is 1 hour? 13 hours? 20 hours? 5 hours? 99 hours? 24 hours?

15. Seven days make a week. What part of a week is 1 day? 7 days? 2 days? 5 days? 11 days? 14 days? 3 days?

16. Four farthings make one penny. What part of a penny is 3 farthings? 4 farthings? 2 farthings? 7 farthings? 16 farthings?

17. Twelve pence make one shilling. What part of a shilling is 6 pence? 3 pence? 9 pence? 4 pence? 8 pence? 12 pence? 10 pence?

18. Twenty shillings make one pound. What part of a pound is 4 shillings? 10 shillings? 15 shillings? 20 shillings? 5 shillings? 40 shillings?

19. How many farthings make one shilling? What part of a shilling is 10 farthings? 16 farthings? 12 farthings? 24 farthings? 48 farthings? 155 farthings?

20. Four nails make one quarter, and four quarters make one yard. What part of a yard is 1 nail? 7 nails? 12 nails? 4 nails? 16 nails? 8 nails? 72 nails?

21. Twelve inches make one foot. What part of a foot is 12 inches? 3 inches? 8 inches? 6 inches? 4 inches? 11 inches? 49 inches?

22. Three feet make one yard. What part of a yard is 1 inch? 7 inches? 18 inches? 36 inches? 2 feet? 5 feet? 40 inches?

23. Two hundred and twenty yards make one furlong. What part of a furlong is 17 yards? 11 yards? 192 yards? 216 yards? 440 yards? 999 yards?

24. Eight furlongs make one mile. What part of a mile is 7 furlongs? 3 furlongs? 11 furlongs? 2 furlongs? 8 furlongs? 4 furlongs?

25. Three miles make one league. What part of a league is 1 furlong? 8 furlongs? 12 furlongs? 16 furlongs? 24 furlongs? 90 furlongs?

26. Ten mills make one cent; ten cents make one dime; ten dimes make one dollar; ten dollars make one eagle. What part of a cent is 5 mills? 7 mills? 2 mills? 10 mills?

27. What part of a dime is 16 cents? What part of a dollar is 4 dimes? What part of an eagle is 9 dollars?

28. In Avoirdupois weight, sixteen drams make one ounce. What part of an ounce is 11 drams? 16 drams? 72 drams?

29. An ounce Avoirdupois is one-sixteenth of a pound. How many ounces in 2 sixteenths of a pound? In 7 sixteenths? In 29 sixteenths? In a pound?

30. A pound Avoirdupois is one twenty-eighth of a quarter.* How many pounds in 7 twenty-eighths of a quarter? In 13 twenty-eighths? In 45 twenty-eighths? In a quarter?

31. A quarter is one-fourth of a hundred-weight, and a hundred-weight is one-twentieth of a ton. How many quarters make a hundred-weight? How many hundred-weight make a ton? How many quarters make a ton? How many quarters in 7 eightieths of a ton? In 29 eightieths? In 140 eightieths?

32. In Troy weight, a grain is one twenty-fourth of a pennyweight. How many grains in a pennyweight? In 11 twenty-fourths of a pennyweight? In 17 twenty-fourths? In 59 twenty-fourths?

33. A pennyweight is one-twentieth of an ounce. How many pennyweights in an ounce? In 3 twentieths of an ounce? In 13 twentieths? In 31 twentieths?

34. An ounce Troy is one-twelfth of a pound. How

* In some of the states 25 pounds are called a quarter.

many ounces in a pound? In 12 twelfths of a pound? In 4 twelfths? In 15 twelfths? In 37 twelfths?

35. A square inch is one one-hundred-and-forty-fourth of a square foot. How many square inches in a square foot? In 144 one-hundred-and-forty-fourths of a square foot? In 77 one-hundred-and-forty-fourths? In 263 one-hundred-and-forty-fourths?

36. A square foot is one-ninth of a square yard. How many square feet in a square yard? In 9 ninths of a square yard? In 4 ninths? In 14 ninths? In 41 ninths?

37. How many halves make a whole one? How many fourths? How many sixteenths? How many hundredths? How many one-hundred-and-forty-fourths? How many three-hundred-and-fiftieths? How many thousandths? How many tenths?

38. How many whole ones in 2 halves? In 10 halves? In 24 halves? In 16 halves? In 4 halves? In 12 halves? In 6 halves? In 18 halves? In 8 halves? In 20 halves?

39. How many whole ones in 3 thirds? In 9 thirds? In 15 thirds? In 30 thirds? In 6 thirds? In 18 thirds? In 12 thirds? In 36 thirds? In 33 thirds? In 27 thirds?

40. How many whole ones in 4 fourths? In 8 fourths? In 40 fourths? In 20 fourths? In 16 fourths? In 48 fourths? In 36 fourths? In 28 fourths? In 32 fourths?

41. How many whole ones in 5 fifths? In 25 fifths? In 45 fifths? In 55 fifths? In 20 fifths? In 40 fifths? In 60 fifths? In 15 fifths? In 35 fifths?

42. How many whole ones in 6 sixths? In 18 sixths? In 54 sixths? In 72 sixths? In 60 sixths? In 66 sixths? In 42 sixths? In 30 sixths? In 48 sixths?

43. How many whole ones in 7 sevenths? In 21 sevenths? In 49 sevenths? In 63 sevenths? In 56 sevenths? In 84 sevenths? In 49 sevenths? In 35 sevenths?

44. How many whole ones in 8 eighths? In 32 eighths? In 48 eighths? In 64 eighths? In 96 eighths? In 56 eighths? In 16 eighths? In 72 eighths?

45. How many whole ones in 9 ninths? In 81 ninths? In 45 ninths? In 63 ninths? In 108 ninths? In 72 ninths? In 99 ninths? In 54 ninths?

46. How many whole ones in 10 tenths? In 40 tenths? In 70 tenths? In 120 tenths? In 80 tenths? In 100 tenths? In 160 tenths? In 2890 tenths?

47. How many whole ones in 11 elevenths? In 77 elevenths? In 55 elevenths? In 121 elevenths? In 88 elevenths? In 44 elevenths? In 132 elevenths?

48. How many whole ones in 12 twelfths? In 72 twelfths? In 144 twelfths? In 96 twelfths? In 132 twelfths? In 84 twelfths? In 108 twelfths?

49. How many whole ones in 14 halves? In 21 thirds? In 12 fourths? In 10 fifths? In 36 sixths? In 28 sevenths? In 40 eighths? In 27 ninths?

50. How many whole ones in 30 fifths? In 24 sixths? In 77 sevenths? In 88 eighths? In 36 ninths? In 700 tenths? In 110 elevenths? In 84 twelfths?

20. FRACTIONS.—CONTINUED.

The following examples will illustrate the method usually adopted in writing fractions.

One half	is written	$\frac{1}{2}$
One third	" "	$\frac{1}{3}$
One fourth	" "	$\frac{1}{4}$
One fifth	" "	$\frac{1}{5}$
One tenth	" "	$\frac{1}{10}$
One hundredth	" "	$\frac{1}{100}$
One fifty-second	" "	$\frac{1}{52}$
Two elevenths	" "	$\frac{2}{11}$
Four fifths	" "	$\frac{4}{5}$
Nine seventeenths	" "	$\frac{9}{17}$
Eighty-four thousandths	" "	$\frac{84}{1000}$
Twenty-seven eightieths	" "	$\frac{27}{80}$
Four ninety-fifths	" "	$\frac{4}{95}$
Eleven thirteenths	" "	$\frac{11}{13}$
Ninety one-hundred-and-thirds	" "	$\frac{90}{103}$

1. Read the following examples: $\frac{2}{11}$; $\frac{29}{87}$; $\frac{2}{18}$; $\frac{25}{25}$; $\frac{29}{108}$; $\frac{72}{801}$; $\frac{810}{87}$; $\frac{62}{31}$; $\frac{4}{19}$; $\frac{15}{100}$; $\frac{8}{75}$; $\frac{878}{120}$; $\frac{49}{49}$; $\frac{40}{33}$; $\frac{7}{11}$; $\frac{8}{101}$; $\frac{260}{84}$; $\frac{99}{101}$; $\frac{4}{9}$; $\frac{919}{18}$; $\frac{118}{801}$; $\frac{800}{88}$; $\frac{66}{88}$; $\frac{23}{88}$; $\frac{18}{103}$; $\frac{703}{103}$; $\frac{307}{30}$; $\frac{16}{8}$; $\frac{77}{809}$; $\frac{19}{99}$; $\frac{18}{103}$.

2. Write each of the following examples in figures.
 3 fourths; 4 thirds; 7 thirteenths; 13 sevenths; 3 seventeenths; 9 seven-hundred-and-firsts; 75 sixty-thirds; 26 five-hundred-and-sevenths; 903 eightieths; 66 seven-hundred-and-seconds.

3. Mary wishes to divide an apple among six of her

playmates. How much can she give to each? What is the quotient of 1 divided by 6? How many sixths make a whole one?

4. If a barrel of flour be divided equally among five men, how much will each man receive? What is the quotient of 1 divided by 5? How many fifths make a whole one?

5. If a pound of raisins costs five cents, how much will $\frac{1}{5}$ of a pound cost? How much will $\frac{2}{5}$? $\frac{3}{5}$? $\frac{4}{5}$? $\frac{5}{5}$?

6. Eliza wishes to give three of her companions some candy. How much can she give to each, if she divides one stick among them? How much if she divides two sticks? What is the quotient of 1 divided by 3? 2 divided by 3? How many thirds make a whole one?

7. A gentleman wishes to distribute some bread among seven beggars. How much can he give to each, if he divides one loaf among them? How much if he divides two loaves? 3 loaves? 4 loaves? 5 loaves? 6 loaves? 7 loaves? What is the quotient of 1 divided by 7? 2 divided by 7? 3 divided by 7? 4 divided by 7? 5 divided by 7? 6 divided by 7? 7 divided by 7? How many sevenths make a whole one?

8. What is one-seventh of one? $\frac{1}{7}$ of 2? $\frac{1}{7}$ of 3? $\frac{1}{7}$ of 4? $\frac{1}{7}$ of 5? $\frac{1}{7}$ of 6? $\frac{1}{7}$ of 7?

9. Eight boys go to gather chestnuts. How many ought each to receive, if they find but one quart? How many if they find two quarts? 3 quarts? 6 quarts? 7 quarts? 8 quarts? What is the quotient of 1 divided by 8? 2 divided by 8? 3 divided by 8? 6 divided by

8? 7 divided by 8? 8 divided by 8? How many eighths make a whole one?

10. What is one-eighth of one? $\frac{1}{8}$ of 2? $\frac{1}{8}$ of 3? $\frac{1}{8}$ of 6? $\frac{1}{8}$ of 7? $\frac{1}{8}$ of 8?

11. Nine families consume a barrel of flour in one week. What part of a barrel will one family consume in one week? In 2 weeks? In 3 weeks? In 7 weeks? In 9 weeks? How many ninths make a whole one?

12. What is one-ninth of one? $\frac{1}{9}$ of 2? $\frac{1}{9}$ of 3? $\frac{1}{9}$ of 7? $\frac{1}{9}$ of 9?

13. If ten horses eat a ton of hay in a month, what part of a ton will one horse eat in one month? What part in two months? 3 months? 4 months? 5 months? 6 months? 7 months? 8 months? 9 months? 10 months?

14. What is the quotient of one divided by ten? 2 divided by 10? 3 divided by 10? 4 divided by 10? 5 divided by 10? 6 divided by 10? 7 divided by 10? 8 divided by 10? 9 divided by 10? 10 divided by 10? How many tenths make a whole one?

15. What is one-tenth of one? $\frac{1}{10}$ of 2? $\frac{1}{10}$ of 3? $\frac{1}{10}$ of 4? $\frac{1}{10}$ of 5? $\frac{1}{10}$ of 6? $\frac{1}{10}$ of 7? $\frac{1}{10}$ of 8? $\frac{1}{10}$ of 9? $\frac{1}{10}$ of 10? $\frac{2}{10}$ of 10? $\frac{3}{10}$ of 10? $\frac{4}{10}$ of 10? $\frac{5}{10}$ of 10? $\frac{6}{10}$ of 10? $\frac{7}{10}$ of 10? $\frac{8}{10}$ of 10? $\frac{9}{10}$ of 10? $\frac{10}{10}$ of 10?

16. Which is the larger, $\frac{1}{8}$ or $\frac{1}{9}$? $\frac{1}{10}$ or $\frac{1}{11}$? $\frac{1}{3}$ or $\frac{1}{4}$? $\frac{1}{4}$ or $\frac{1}{10}$? $\frac{1}{4}$ or $\frac{1}{20}$? $\frac{1}{13}$ or $\frac{1}{12}$? $\frac{1}{19}$ or $\frac{1}{15}$?

21. FRACTIONS.—CONTINUED.

1. Elizabeth wished to divide seven apples equally

between Martha, Louisa, and Mary. She gave them two apples apiece, and found she still had one left. How must she divide that one? Then how many apples did she give to each?

2. 7 are how many times 3? *Ans.* 2 times 3 and $\frac{1}{3}$ of 3.

3. How much is $\frac{1}{3}$ of 7? *Ans.* $\frac{7}{3}$, or 2 and $\frac{1}{3}$.

4. 8 are how many times 3? *Ans.* 2 times 3 and $\frac{2}{3}$ of 3.

5. 9 are how many times 3? What is $\frac{1}{3}$ of 9?

6. 10 are how many times 3? What is $\frac{1}{3}$ of 10?

7. 11 are how many times 3? What is $\frac{1}{3}$ of 11?

8. 12 are how many times 3? What is $\frac{1}{3}$ of 12?

9. 13 are how many times 3? What is $\frac{1}{3}$ of 13?

10. 14 are how many times 3? What is $\frac{1}{3}$ of 14?

11. 15 are how many times 3? What is $\frac{1}{3}$ of 15?

12. Silas promised to give four boys five apples, and he wished them to tell how to divide them equally. How much ought each-boy to receive?

13. 5 are how many times 4? What is $\frac{1}{4}$ of 5?
 $\frac{1}{4}$ are how many whole ones?

14. 6 are how many times 4? What is $\frac{1}{4}$ of 6?
 $\frac{1}{4}$ are how many whole ones?

15. 7 are how many times 4? What is $\frac{1}{4}$ of 7?
 $\frac{1}{4}$ are how many whole ones?

16. 8 are how many times 4? What is $\frac{1}{4}$ of 8?
are how many whole ones?

17. 12 are how many times 4? What is $\frac{1}{4}$ of 12?
 $\frac{1}{4}$ are how many whole ones?

18. 16 are how many times 4? What is $\frac{1}{4}$ of 16?
 $\frac{1}{4}$ are how many whole ones?

19. 17 are how many times 4? What is $\frac{1}{4}$ of 17?
 $\frac{1}{4}$ are how many whole ones?

20. 19 are how many times 4? What is $\frac{1}{4}$ of 19?
 $\frac{1}{4}$ are how many whole ones?

21. If a yard of broadcloth costs five dollars, how much can be bought for six dollars?

22. 6 are how many times 5? What is $\frac{1}{5}$ of 6? $\frac{1}{5}$ are how many whole ones?

23. 7 are how many times 5? What is $\frac{1}{5}$ of 7? $\frac{1}{5}$ are how many whole ones?

24. 8 are how many times 5? What is $\frac{1}{5}$ of 8? $\frac{1}{5}$ are how many whole ones?

25. 9 are how many times 5? What is $\frac{1}{5}$ of 9? $\frac{1}{5}$ are how many whole ones?

26. 10 are how many times 5? What is $\frac{1}{5}$ of 10?
 $\frac{1}{5}$ are how many whole ones?

27. 11 are how many times 5? What is $\frac{1}{5}$ of 11?
 $\frac{1}{5}$ are how many whole ones?

28. 14 are how many times 5? What is $\frac{1}{5}$ of 14?
 $\frac{1}{5}$ are how many whole ones?

29. If a loom will weave six yards of cloth in an hour, in what time will it weave seven yards? 8 yards? 12 yards? 20 yards?

30. 7 are how many times 6? What is $\frac{1}{6}$ of 7? $\frac{1}{6}$ are how many whole ones?

31. 8 are how many times 6? What is $\frac{1}{6}$ of 8? $\frac{2}{3}$ are how many whole ones?

32. 12 are how many times 6? What is $\frac{1}{6}$ of 12? $\frac{1}{8}$ are how many whole ones?

33. 18 are how many times 6? What is $\frac{1}{6}$ of 18? $\frac{1}{8}$ are how many whole ones?

34. 19 are how many times 6? What is $\frac{1}{6}$ of 19? $\frac{1}{8}$ are how many whole ones?

35. 20 are how many times 6? What is $\frac{1}{6}$ of 20? $\frac{2}{9}$ are how many whole ones?

36. 29 are how many times 6? What is $\frac{1}{6}$ of 29? $\frac{2}{9}$ are how many whole ones?

37. How many weeks are there in eight days? In 9 days? 14 days? 17 days? 19 days? 20 days? 30 days? 40 days? 50 days?

38. 8 are how many times 7? What is $\frac{1}{7}$ of 8? $\frac{2}{7}$ are how many whole ones?

39. 17 are how many times 7? What is $\frac{1}{7}$ of 17? $\frac{1}{7}$ are how many whole ones?

40. 20 are how many times 7? What is $\frac{1}{7}$ of 20? $\frac{2}{9}$ are how many whole ones?

41. 40 are how many times 7? What is $\frac{1}{7}$ of 40? $\frac{4}{9}$ are how many whole ones?

42. 50 are how many times 7? What is $\frac{1}{7}$ of 50? $\frac{5}{9}$ are how many whole ones?

43. If a quart of molasses costs nine cents, how many quarts can be bought for 11 cents? for 25 cents? for 36 cents? for 38 cents? for 44 cents?

44. 36 are how many times 9? What is $\frac{1}{9}$ of 36?
 $\frac{3}{9}$ are how many whole ones?

45. 44 are how many times 9? What is $\frac{1}{9}$ of 44?
 $\frac{4}{9}$ are how many whole ones?

46. How many dimes are there in 20 cents? In 30 cents? In 32 cents? In 45 cents? In 47 cents? In 59 cents?

47. 47 are how many times 10? What is $\frac{1}{10}$ of 47?
 $\frac{4}{10}$ are how many whole ones?

48. 59 are how many times 10? What is $\frac{1}{10}$ of 59?
 $\frac{5}{10}$ are how many whole ones?

49. How many whole ones are there in $\frac{4}{8}$? In $\frac{8}{8}$?
 In $\frac{8}{8}$? In $\frac{7}{10}$? In $\frac{8}{8}$? In $\frac{7}{8}$? In $\frac{8}{8}$? In $\frac{7}{8}$? In $\frac{8}{8}$?

22. FRACTIONS.—CONTINUED.

1. George had one-half of an apple, and Nathan gave him one-half more. How much had he then? how much are $\frac{1}{2}$ and $\frac{1}{2}$?

2. Eliza received one-third of a cake from her mother, and one-third from one of her playmates. How much had she then? how much are $\frac{1}{3}$ and $\frac{1}{3}$?

3. Thomas gave one-fourth of a dollar for a handkerchief, and two-fourths of a dollar for a pair of skates. How much did they both cost? how much are $\frac{1}{4}$ and $\frac{2}{4}$?

4. A grocer sells one-fifth of a barrel of flour to one man, and two-fifths to another. How much does he sell to both? how much are $\frac{1}{5}$ and $\frac{2}{5}$?

5. Charles gave two-sixths of an orange to his

brother, and three-sixths to his sister. How much did he give away? how much are $\frac{2}{3}$ and $\frac{1}{3}$?

6. A merchant owning four-sevenths of a ship, bought two-sevenths more. What part did he then own? how much are $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$? $\frac{1}{2}$ and $\frac{1}{4}$?

7. A merchant owning six-sevenths of a ship, sold two-sevenths of it. What part did he then own? how much are $\frac{1}{2}$ less $\frac{1}{4}$? $\frac{3}{4}$ less $\frac{1}{4}$?

8. Jane ate three-eighths of an apple one day, and five-eighths the next day. How much did she eat in both days? how much are $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$? $\frac{1}{2}$ and $\frac{1}{4}$?

9. Jane ate three-eighths of an apple. What part of the apple was then left? how much are $\frac{1}{2}$ less $\frac{1}{4}$? 1 less $\frac{1}{4}$? 1 less $\frac{1}{2}$? $\frac{1}{2}$ less $\frac{1}{4}$?

10. James rode five-ninths of a mile, and walked two-ninths. How far did he go in the whole? how much are $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$? $\frac{1}{2}$ and $\frac{1}{4}$?

11. John went seven-ninths of a mile on an errand. He rode five-ninths of a mile, and walked the rest of the distance. How far did he walk? $\frac{1}{2}$ from $\frac{1}{4}$ leave how much? $\frac{1}{2}$ from $\frac{3}{4}$? $\frac{1}{2}$ from $\frac{1}{2}$ or 1 ? $\frac{1}{4}$ from 1 ?

12. A grocer sold some sugar for three-tenths of a dollar, and some tea for four-tenths of a dollar. How much did he receive for both? how much are $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$? $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$? $\frac{1}{2}$ and $\frac{1}{4}$? $\frac{3}{4}$ and $\frac{1}{4}$?

13. A grocer received seven-tenths of a dollar, of which four-tenths were for tea, and the rest for sugar.

How much did he receive for the sugar? $\frac{4}{10}$ from $\frac{7}{10}$ leave how many tenths? $\frac{3}{10}$ from $\frac{9}{10}$? $\frac{7}{10}$ from 1? $\frac{4}{10}$ from 1? $\frac{2}{10}$ from 1?

14. How many tenths are seven-tenths and five-tenths? $\frac{8}{10}$ and $\frac{3}{10}$? $\frac{6}{10}$ and $\frac{9}{10}$?

15. What is the difference between $\frac{5}{10}$ and $\frac{7}{10}$? $\frac{1}{10}$ and $\frac{3}{10}$? $\frac{9}{10}$ and $\frac{4}{10}$? $\frac{2}{10}$ and $\frac{6}{10}$?

16. How many elevenths are three-elevenths and eight-elevenths? $\frac{2}{11}$ and $\frac{9}{11}$? $\frac{7}{11}$ and $\frac{5}{11}$? $\frac{4}{11}$ and $\frac{1}{11}$? $\frac{8}{11}$ and $\frac{12}{11}$? $\frac{5}{11}$ and $\frac{5}{11}$?

17. $\frac{3}{11}$ from one leave how many elevenths? $\frac{2}{11}$ from $\frac{3}{11}$? $\frac{4}{11}$ from $\frac{5}{11}$? $\frac{10}{11}$ from $\frac{12}{11}$? $\frac{5}{11}$ from $\frac{16}{11}$?

23. FRACTIONS.—CONTINUED.

1. William divided an apple into two equal parts, and afterwards divided each of those parts into two parts. Into how many parts was the apple then divided? What would one of those parts be called? How much is $\frac{1}{2}$ of $\frac{1}{2}$?

2. If an orange were divided into three pieces, and each of those pieces divided into two pieces, how many pieces would there be of the orange? What would one of those pieces be called? What is $\frac{1}{3}$ of $\frac{1}{3}$?

3. If I cut an apple into quarters, and then halve each quarter, how many pieces will there be of the apple? What will one piece be called? What is $\frac{1}{2}$ of $\frac{1}{4}$?

4. Ellen cut a cake into five equal parts, and then cut each part in two. How many pieces had she?

What would one piece be called? What is $\frac{1}{2}$ of $\frac{1}{8}$? $\frac{1}{2}$ of $\frac{2}{8}$? $\frac{1}{2}$ of $\frac{3}{8}$?

5. If you divide half an apple into three equal parts, what part of the whole apple will each piece be? What is $\frac{1}{3}$ of $\frac{1}{2}$? $\frac{2}{3}$ of $\frac{1}{2}$?

6. A family use one-third of a barrel of flour in three weeks. What part of a barrel will they use in one week? What is $\frac{1}{3}$ of $\frac{1}{3}$? $\frac{1}{3}$ of $\frac{2}{3}$? $\frac{2}{3}$ of $\frac{2}{3}$?

7. If a horse eats one-fourth of a bushel of oats in three days, how long will it take him to eat a bushel? Then what part of a bushel will he eat in one day? What is $\frac{1}{3}$ of $\frac{1}{4}$? $\frac{1}{3}$ of $\frac{2}{4}$? $\frac{1}{3}$ of $\frac{3}{4}$? $\frac{2}{3}$ of $\frac{3}{4}$?

8. If a man walks one-fifth of a mile in three minutes, how long will it take him to walk a mile? What part of a mile will he walk in one minute? What is $\frac{1}{3}$ of $\frac{1}{5}$? $\frac{1}{3}$ of $\frac{2}{5}$? $\frac{1}{3}$ of $\frac{3}{5}$? $\frac{1}{3}$ of $\frac{4}{5}$? $\frac{2}{3}$ of $\frac{4}{5}$?

9. If I cut an apple into quarters, and cut each quarter into quarters, how many pieces shall I have? What will one of the pieces be called? What is $\frac{1}{4}$ of $\frac{1}{4}$? $\frac{1}{4}$ of $\frac{2}{4}$? $\frac{1}{4}$ of $\frac{3}{4}$? $\frac{2}{4}$ of $\frac{3}{4}$? $\frac{3}{4}$ of $\frac{3}{4}$?

10. How much is one-fifth of twenty cents? $\frac{1}{4}$ of $\frac{1}{5}$ of 20 cents? What part of 20 cents is 1 cent? Then what is $\frac{1}{4}$ of $\frac{1}{5}$? $\frac{1}{4}$ of $\frac{2}{5}$? $\frac{1}{4}$ of $\frac{3}{5}$? $\frac{1}{4}$ of $\frac{4}{5}$? $\frac{2}{4}$ of $\frac{4}{5}$? $\frac{3}{4}$ of $\frac{4}{5}$?

11. What is $\frac{1}{5}$ of $\frac{1}{5}$? $\frac{1}{5}$ of $\frac{2}{5}$? $\frac{1}{5}$ of $\frac{3}{5}$? $\frac{1}{5}$ of $\frac{4}{5}$? $\frac{2}{5}$ of $\frac{4}{5}$? $\frac{3}{5}$ of $\frac{4}{5}$? $\frac{4}{5}$ of $\frac{4}{5}$?

12. What is $\frac{1}{5}$ of $\frac{1}{5}$? $\frac{1}{5}$ of $\frac{2}{5}$? $\frac{2}{5}$ of $\frac{2}{5}$? $\frac{3}{5}$ of $\frac{2}{5}$? $\frac{4}{5}$ of $\frac{2}{5}$?

13. What is $\frac{1}{2}$ of 2? $\frac{1}{2}$ of $\frac{2}{3}$? $\frac{1}{2}$ of $\frac{2}{5}$? $\frac{1}{2}$ of $\frac{2}{7}$? $\frac{1}{2}$ of $\frac{2}{9}$?

14. What is $\frac{1}{2}$ of 4? $\frac{1}{2}$ of $\frac{4}{3}$? $\frac{1}{2}$ of $\frac{4}{5}$? $\frac{1}{2}$ of $\frac{4}{7}$? $\frac{1}{2}$ of $\frac{4}{9}$?

15. What is $\frac{1}{3}$ of 3? $\frac{1}{3}$ of $\frac{3}{2}$? $\frac{1}{3}$ of $\frac{3}{4}$? $\frac{1}{3}$ of $\frac{3}{5}$? $\frac{1}{3}$ of $\frac{3}{7}$?

16. What is $\frac{1}{5}$ of 6? $\frac{1}{5}$ of $\frac{6}{2}$? $\frac{1}{5}$ of $\frac{6}{4}$? $\frac{1}{5}$ of $\frac{6}{5}$? $\frac{1}{5}$ of $\frac{6}{7}$?

17. What is $\frac{1}{4}$ of 4? $\frac{1}{4}$ of $\frac{4}{3}$? $\frac{1}{4}$ of $\frac{4}{5}$? $\frac{1}{4}$ of $\frac{4}{7}$? $\frac{1}{4}$ of $\frac{4}{9}$? $\frac{1}{4}$ of $\frac{4}{11}$?

18. What is $\frac{2}{4}$ of 4? $\frac{2}{4}$ of $\frac{4}{3}$? $\frac{2}{4}$ of $\frac{4}{5}$? $\frac{2}{4}$ of $\frac{4}{7}$? $\frac{2}{4}$ of $\frac{4}{9}$? $\frac{2}{4}$ of $\frac{4}{11}$?

19. What is $\frac{3}{4}$ of 4? $\frac{3}{4}$ of $\frac{4}{3}$? $\frac{3}{4}$ of $\frac{4}{5}$? $\frac{3}{4}$ of $\frac{4}{7}$? $\frac{3}{4}$ of $\frac{4}{9}$? $\frac{3}{4}$ of $\frac{4}{11}$?

20. What is $\frac{1}{5}$ of 5? $\frac{1}{5}$ of $\frac{5}{2}$? $\frac{1}{5}$ of $\frac{5}{4}$? $\frac{1}{5}$ of $\frac{5}{6}$? $\frac{1}{5}$ of $\frac{5}{8}$? $\frac{1}{5}$ of $\frac{5}{10}$?

21. What is $\frac{2}{5}$ of 5? $\frac{2}{5}$ of $\frac{5}{2}$? $\frac{2}{5}$ of $\frac{5}{4}$? $\frac{2}{5}$ of $\frac{5}{6}$? $\frac{2}{5}$ of $\frac{5}{8}$? $\frac{2}{5}$ of $\frac{5}{10}$?

22. What is $\frac{3}{5}$ of 5? $\frac{3}{5}$ of $\frac{5}{2}$? $\frac{3}{5}$ of $\frac{5}{4}$? $\frac{3}{5}$ of $\frac{5}{6}$? $\frac{3}{5}$ of $\frac{5}{8}$? $\frac{3}{5}$ of $\frac{5}{10}$?

23. What is $\frac{4}{5}$ of 5? $\frac{4}{5}$ of $\frac{5}{2}$? $\frac{4}{5}$ of $\frac{5}{4}$? $\frac{4}{5}$ of $\frac{5}{6}$? $\frac{4}{5}$ of $\frac{5}{8}$? $\frac{4}{5}$ of $\frac{5}{10}$?

24. What is $\frac{1}{6}$ of 6? $\frac{1}{6}$ of $\frac{6}{2}$? $\frac{1}{6}$ of $\frac{6}{4}$? $\frac{1}{6}$ of $\frac{6}{5}$? $\frac{1}{6}$ of $\frac{6}{7}$? $\frac{1}{6}$ of $\frac{6}{10}$?

25. What is $\frac{2}{6}$ of 6? $\frac{2}{6}$ of $\frac{6}{2}$? $\frac{2}{6}$ of $\frac{6}{4}$? $\frac{2}{6}$ of $\frac{6}{5}$? $\frac{2}{6}$ of $\frac{6}{7}$? $\frac{2}{6}$ of $\frac{6}{10}$?

26. What is $\frac{3}{6}$ of 6? $\frac{3}{6}$ of $\frac{6}{2}$? $\frac{3}{6}$ of $\frac{6}{4}$? $\frac{3}{6}$ of $\frac{6}{5}$? $\frac{3}{6}$ of $\frac{6}{7}$? $\frac{3}{6}$ of $\frac{6}{10}$?

27. What is $\frac{4}{6}$ of 6? $\frac{4}{6}$ of $\frac{6}{2}$? $\frac{4}{6}$ of $\frac{6}{4}$? $\frac{4}{6}$ of $\frac{6}{5}$? $\frac{4}{6}$ of $\frac{6}{7}$? $\frac{4}{6}$ of $\frac{6}{10}$?

28. What is $\frac{2}{3}$ of 6? $\frac{2}{3}$ of $\frac{2}{3}$? $\frac{2}{3}$ of $\frac{2}{3}$? $\frac{2}{3}$ of $\frac{2}{3}$? $\frac{2}{3}$ of $\frac{2}{3}$? $\frac{2}{3}$ of $\frac{2}{3}$?

29. What is $\frac{1}{10}$ of 10? $\frac{1}{10}$ of $\frac{1}{10}$? $\frac{1}{10}$ of $\frac{1}{10}$? $\frac{1}{10}$ of $\frac{1}{10}$? $\frac{1}{10}$ of $\frac{1}{10}$? $\frac{1}{10}$ of $\frac{1}{10}$?

30. What is $\frac{3}{10}$ of 10? $\frac{3}{10}$ of $\frac{3}{10}$? $\frac{3}{10}$ of $\frac{3}{10}$? $\frac{3}{10}$ of $\frac{3}{10}$? $\frac{3}{10}$ of $\frac{3}{10}$? $\frac{3}{10}$ of $\frac{3}{10}$?

31. What is $\frac{7}{10}$ of 10? $\frac{7}{10}$ of $\frac{7}{10}$? $\frac{7}{10}$ of $\frac{7}{10}$? $\frac{7}{10}$ of $\frac{7}{10}$? $\frac{7}{10}$ of $\frac{7}{10}$? $\frac{7}{10}$ of $\frac{7}{10}$?

32. What is $\frac{9}{10}$ of 10? $\frac{9}{10}$ of $\frac{9}{10}$? $\frac{9}{10}$ of $\frac{9}{10}$? $\frac{9}{10}$ of $\frac{9}{10}$? $\frac{9}{10}$ of $\frac{9}{10}$? $\frac{9}{10}$ of $\frac{9}{10}$?

Fractions of fractions, such as $\frac{1}{2}$ of $\frac{2}{3}$; $\frac{2}{3}$ of $\frac{3}{4}$, &c., are called *Compound Fractions*.

24. FRACTIONS.—CONTINUED.

1. Ten tenths make a whole one; then how many tenths are there in $\frac{1}{2}$? What is $\frac{1}{2}$ of 10?

2. What is $\frac{1}{5}$ of 10? How many tenths are there in $\frac{1}{5}$? $\frac{2}{5}$? $\frac{3}{5}$? $\frac{4}{5}$?

3. What is $\frac{1}{2}$ of 4? How many fourths are there in $\frac{1}{2}$? How many sixths?

4. $\frac{1}{2}$ is how many eighths? twelfths? twentieths? hundredths?

5. $\frac{1}{3}$ is how many sixths? ninths? twelfths? fifteenths? forty-fifths?

6. $\frac{1}{4}$ is how many eighths? twelfths? sixteenths? twentieths? fortieths?

7. $\frac{1}{5}$ is how many tenths? fifteenths? twentieths? twenty-fifths? fiftieths?

8. $\frac{1}{8}$ is how many twelfths? eighteenth? twenty-fourths? sixtieths?

9. $\frac{1}{4}$ is how many fourteenths? twenty-eighths? thirty-fifths? seventieths?

10. $\frac{1}{8}$ is how many sixteenths? twenty-fourths? fortieths? eightieths?

11. $\frac{1}{4}$ is how many eighteenth? forty-fifths? sixty-thirds? ninetieths?

12. $\frac{1}{10}$ is how many twentieths? thirtieths? fiftieths? hundredths?

13. How many sixths are there in $\frac{1}{2}$? $\frac{1}{3}$? $\frac{2}{3}$?

14. How many eighths are there in $\frac{1}{2}$? $\frac{1}{4}$? $\frac{2}{4}$? $\frac{3}{4}$?

15. How many twelfths are there in $\frac{1}{2}$? $\frac{1}{3}$? $\frac{2}{3}$? $\frac{1}{4}$? $\frac{3}{4}$? $\frac{5}{6}$? $\frac{7}{8}$?

16. How many fourteenths are there in $\frac{1}{2}$? $\frac{1}{4}$? $\frac{2}{4}$? $\frac{5}{7}$?

17. How many sixteenths are there in $\frac{1}{2}$? $\frac{1}{4}$? $\frac{3}{4}$? $\frac{1}{8}$? $\frac{3}{8}$? $\frac{5}{8}$? $\frac{7}{8}$?

18. How many eighteenth are there in $\frac{1}{2}$? $\frac{1}{3}$? $\frac{5}{9}$? $\frac{7}{9}$? $\frac{1}{6}$? $\frac{2}{3}$? $\frac{5}{6}$?

19. How many twentieths are there in $\frac{1}{2}$? $\frac{1}{10}$? $\frac{7}{10}$? $\frac{9}{10}$? $\frac{1}{4}$? $\frac{1}{5}$? $\frac{3}{4}$? $\frac{3}{5}$? $\frac{4}{5}$?

20. How many sixtieths are there in $\frac{1}{2}$? $\frac{1}{3}$? $\frac{1}{4}$? $\frac{1}{6}$? $\frac{1}{5}$? $\frac{1}{10}$? $\frac{1}{15}$? $\frac{1}{20}$? $\frac{1}{30}$?

21. How many hundredths are there in $\frac{1}{2}$? $\frac{1}{4}$? $\frac{3}{4}$? $\frac{1}{5}$? $\frac{2}{5}$? $\frac{3}{5}$? $\frac{4}{5}$? $\frac{1}{10}$? $\frac{3}{10}$? $\frac{7}{10}$? $\frac{9}{10}$?

25. FRACTIONS.—CONTINUED.

1. If one yard of silk costs two dollars, what will

half a yard cost? 1 yard and $\frac{1}{2}$? 2 yards and $\frac{1}{2}$?
What is $\frac{1}{2}$ of 2? $1\frac{1}{2}$ times 2? $2\frac{1}{2}$ times 2?

2. If one yard of silk costs two dollars and a half, what will two yards cost? How many are 2 times 2? 2 times $\frac{1}{2}$? 2 times 2 and 2 times $\frac{1}{2}$? 2 times $2\frac{1}{2}$?

3. If one yard of cassimere costs three dollars, what will one-third of a yard cost? $\frac{2}{3}$ of a yard? 1 yard and $\frac{2}{3}$? 2 yards and $\frac{2}{3}$? 3 yards and $\frac{2}{3}$? What is $\frac{1}{3}$ of 3? $\frac{2}{3}$ of 3? $1\frac{2}{3}$ times 3? $2\frac{2}{3}$ times 3? $3\frac{2}{3}$ times 3?

4. 3 times $\frac{1}{3}$ are how many whole ones? 3 times $\frac{2}{3}$? 3 times 1 and 3 times $\frac{2}{3}$? 3 times $2\frac{2}{3}$? 3 times $3\frac{2}{3}$? 3 times $4\frac{2}{3}$?

5. How much must I give for three barrels of apples, at one and two-thirds dollars a barrel? How much at $2\frac{2}{3}$ dollars? At $3\frac{2}{3}$ dollars?

6. If a laborer receives four dollars a week, how much will he receive for one-fourth of a week? How much for $\frac{3}{4}$? for $1\frac{3}{4}$? $2\frac{3}{4}$? $3\frac{3}{4}$? $4\frac{3}{4}$? What is $\frac{1}{4}$ of 4? $\frac{3}{4}$ of 4? $1\frac{3}{4}$ times 4? $2\frac{3}{4}$ times 4? $3\frac{3}{4}$ times 4? $4\frac{3}{4}$ times 4?

7. 4 times $\frac{1}{4}$ are how many whole ones? 4 times $\frac{3}{4}$? 4 times $1\frac{3}{4}$? 4 times $2\frac{3}{4}$? 4 times $3\frac{3}{4}$? 4 times $4\frac{3}{4}$?

8. What will four barrels of flour cost, at four and three-fourths dollars a barrel? at $5\frac{3}{4}$ dollars? at $6\frac{3}{4}$ dollars?

9. How many are two-fifths of five? $\frac{3}{5}$ of 5? $1\frac{3}{5}$ times 5? $2\frac{3}{5}$ times 5? $3\frac{3}{5}$ times 5?

10. How many are 5 times $\frac{2}{5}$? 5 times $\frac{3}{5}$? 5 times $1\frac{2}{5}$? 5 times $2\frac{2}{5}$? 5 times $3\frac{2}{5}$?

11. At six dollars a yard, what will be the cost of

three and one-sixth yards? Of $4\frac{1}{2}$ yards? $5\frac{1}{2}$ yards? $7\frac{1}{2}$ yards?

12. How many are 6 times $3\frac{1}{2}$? 6 times $4\frac{1}{2}$? 6 times $6\frac{1}{2}$? 6 times $7\frac{1}{2}$?

13. How many days are there in one and five-sevenths weeks? In $2\frac{3}{7}$? $3\frac{3}{7}$? $4\frac{3}{7}$? $7\frac{1}{7}$? How much are 7 times $1\frac{5}{7}$? 7 times $2\frac{3}{7}$? 7 times $3\frac{3}{7}$? 7 times $4\frac{3}{7}$? 7 times $7\frac{1}{7}$?

14. At eight dollars a barrel, what will seven and six-eighths barrels of flour cost? What are $7\frac{6}{8}$ times 8? 8 times $7\frac{6}{8}$?

15. At nine dollars a month, what would be a laborer's wages for seven and seven-ninths months? What are $7\frac{7}{9}$ times 9? 9 times $7\frac{7}{9}$?

16. If a ship sails ten miles an hour, how far will she sail in six and three-tenths hours? What are $6\frac{3}{10}$ times 10? 10 times $6\frac{3}{10}$? 10 times $7\frac{5}{10}$? 10 times $9\frac{9}{10}$?

26. FRACTIONS.—CONTINUED.

1. Since $\frac{2}{2}$ make 1, how many halves are there in 2? $2\frac{1}{2}$? 3? $3\frac{1}{2}$? 4? $4\frac{1}{2}$? 5?

2. How many thirds in 2? $2\frac{1}{3}$? $2\frac{2}{3}$? 3? $3\frac{1}{3}$? $3\frac{2}{3}$? 4? $4\frac{1}{3}$? $4\frac{2}{3}$? 5?

3. How many fourths in 2? $2\frac{1}{4}$? $2\frac{2}{4}$? $2\frac{3}{4}$? 3? $3\frac{1}{4}$? $4\frac{1}{4}$? 5?

4. How many fifths in 2? $2\frac{1}{5}$? $2\frac{2}{5}$? 3? $3\frac{1}{5}$? $4\frac{1}{5}$? 5? $7\frac{1}{5}$?

5. Change or reduce 2 to sixths; $2\frac{1}{6}$; $2\frac{2}{6}$; $2\frac{3}{6}$; $2\frac{4}{6}$; $3\frac{1}{6}$; $6\frac{1}{6}$.

6. Reduce 2 to sevenths; $2\frac{5}{7}$; 3; $3\frac{2}{7}$; $4\frac{1}{7}$; $4\frac{4}{7}$; $4\frac{6}{7}$; 5; 6; $7\frac{3}{7}$.

7. Reduce 2 to eighths; $2\frac{1}{8}$; $2\frac{3}{8}$; $2\frac{5}{8}$; $2\frac{7}{8}$; 3; 4; 5; $6\frac{1}{8}$; $7\frac{3}{8}$.

8. Reduce 2 to ninths; 3; 4; 5; $5\frac{1}{9}$; $5\frac{2}{9}$; $6\frac{4}{9}$; $7\frac{5}{9}$.

9. Reduce 2 to tenths; $2\frac{5}{10}$; $2\frac{7}{10}$; $2\frac{9}{10}$; $3\frac{4}{10}$; $4\frac{3}{10}$; $5\frac{5}{10}$; $6\frac{9}{10}$.

10. Reduce $9\frac{7}{8}$ to eighths; $10\frac{3}{8}$ to fifths; $12\frac{1}{2}$ to halves; $11\frac{2}{3}$ to thirds; $8\frac{3}{4}$ to fourths; 8 to sevenths; $7\frac{5}{8}$ to sixths; $9\frac{2}{7}$ to sevenths; 12 to fifths; $9\frac{8}{9}$ to ninths; $7\frac{9}{10}$ to tenths.

27. FRACTIONS.—CONTINUED.

1. 15 is $2\frac{1}{2}$ times what number?

MODEL.— $2\frac{1}{2}$ is equivalent to $\frac{5}{2}$. If 15 is $\frac{5}{2}$ of some number, $\frac{1}{2}$ of that number must be $\frac{1}{5}$ of 15, which is 3. If 3 is $\frac{1}{2}$ the number, the whole number must be twice 3, or 6.

2. 21 is $3\frac{1}{2}$ times what number?

3. 21 is $1\frac{1}{2}$ times what number?

4. 24 is $1\frac{1}{2}$ times what number?

5. 10 is $2\frac{1}{2}$ times what number?

6. 12 is $1\frac{1}{3}$ times what number?

7. 20 is $1\frac{2}{3}$ times what number?

8. 28 is $2\frac{1}{3}$ times what number?

9. 24 is $2\frac{2}{3}$ times what number?

10. 50 is $3\frac{1}{3}$ times what number?

11. 77 is $3\frac{2}{3}$ times what number?

12. 55 is $1\frac{1}{4}$ times what number?

13. 56 is $1\frac{1}{4}$ times what number?
14. 72 is $2\frac{1}{4}$ times what number?
15. 66 is $2\frac{3}{4}$ times what number?
16. 6 is $1\frac{1}{5}$ times what number?
17. 35 is $1\frac{2}{5}$ times what number?
18. 64 is $1\frac{3}{5}$ times what number?
19. 54 is $1\frac{4}{5}$ times what number?
20. 44 is $2\frac{1}{5}$ times what number?
21. 144 is $2\frac{2}{5}$ times what number?
22. 58 is $11\frac{3}{5}$ times what number?
23. 56 is $1\frac{1}{8}$ times what number?
24. 132 is $1\frac{5}{8}$ times what number?
25. 132 is $1\frac{5}{7}$ times what number?
26. $37\frac{1}{2}$ is $1\frac{1}{2}$ times what number?
27. $37\frac{1}{2}$ is $2\frac{1}{2}$ times what number?
28. $37\frac{1}{2}$ is $7\frac{1}{2}$ times what number?
29. $37\frac{1}{2}$ is $12\frac{1}{2}$ times what number?
30. $5\frac{5}{7}$ is $3\frac{1}{3}$ times what number?
31. $8\frac{1}{4}$ is $3\frac{2}{3}$ times what number?
32. $15\frac{3}{4}$ is $2\frac{1}{4}$ times what number?
33. $9\frac{1}{8}$ is $2\frac{3}{4}$ times what number?
34. $8\frac{2}{5}$ is $1\frac{1}{5}$ times what number?
35. $14\frac{4}{5}$ is $2\frac{2}{5}$ times what number?

28. FRACTIONS.—CONTINUED.

1. How many times 2 are 4? 5? 6? 7? 8? 9?
- 10? 11? 12? 15? 17? 19? 20? 23? 21? 25?
- 24? 22?

MENTAL EXERCISES.

[ART. I.]

2. How many times 3 are 4? 5? 6? 7? 8? 9?
11? 12? 13? 17? 15? 13? 14? 16? 19? 27?
5? 23? 21? 20? 22? 24? 26? 29? 36? 28? 30?
3. How many times 4 are 8? 9? 10? 11? 12?
13? 14? 15? 16? 20? 25? 29? 34? 38? 43?
47? 46? 42? 37? 33? 28? 21? 19? 18? 17?
41?
4. What is $\frac{1}{2}$ of 4? 5? 6? 7? 8? 9? 10? 11?
12? 15? 17? 19? 20? 23? 28? 25? 24? 22?
5. What is $\frac{1}{3}$ of 4? 5? 6? 7? 8? 9? 10? 11?
12? 18? 17? 15? 13? 14? 16? 19? 27? 25?
23? 21? 20? 22? 24? 26? 29? 36? 28? 30?
6. What is $\frac{1}{4}$ of 8? 9? 10? 11? 12? 13? 14?
15? 16? 20? 25? 29? 34? 38? 43? 47? 46?
42? 37? 33? 28? 21? 19? 18? 17? 41?
7. How many times 5 are 10? 11? 12? 13? 14?
15? 17? 18? 21? 27? 33? 41? 42? 44? 49?
55? 62? 57? 43? 48? 38? 28? 24? 31?
8. How many times 6 are 12? 13? 14? 15? 19?
21? 23? 27? 31? 39? 45? 49? 55? 58? 62?
65? 69? 70? 56? 59? 47? 34? 30? 26? 25?
20?
9. How many times 7 are 14? 15? 16? 17? 18?
19? 20? 24? 30? 37? 44? 51? 58? 65? 67? 72?
79? 22? 66? 33? 45? 50? 23? 34? 31? 38?
10. What is $\frac{1}{5}$ of 10? 11? 12? 13? 14? 15? 17?
18? 21? 27? 33? 41? 42? 44? 49? 55? 62?
57? 43? 48? 38? 28? 24? 31?
11. What is $\frac{1}{6}$ of 12? 13? 14? 15? 19? 21? 23?

27? 31? 39? 45? 49? 55? 58? 62? 65? 69? 70?
56? 59? 47? 34? 30? 26? 25? 20?

12. What is $\frac{1}{7}$ of 14? 15? 16? 17? 18? 19? 20?
24? 30? 37? 44? 51? 58? 65? 67? 72? 79? 22?
66? 33? 45? 50? 23? 34? 31? 38?

13. How many times 8 are 16? 17? 25? 33? 40?
49? 51? 57? 55? 60? 81? 89? 93? 95? 87? 78?
75? 63? 59? 58? 50? 44? 37? 90?

14. How many times 9 are 18? 19? 20? 22? 24?
26? 28? 29? 37? 40? 43? 41? 80? 88? 85?
76? 77? 38? 48? 58? 56? 61? 67? 70? 60?

15. How many times 10 are 20? 25? 36? 43?
55? 67? 76? 84? 91? 102? 115? 123? 125?
117? 109? 98? 89? 72? 27? 33? 45? 58? 61?
77?

16. What is $\frac{1}{8}$ of 16? 17? 25? 33? 40? 49? 51?
57? 55? 60? 81? 89? 93? 95? 87? 78? 75? 63?
59? 58? 50? 44? 37? 90?

17. What is $\frac{1}{9}$ of 18? 19? 20? 22? 24? 26? 28?
29? 37? 40? 43? 41? 80? 88? 85? 76? 77? 38?
48? 58? 56? 61? 67? 70? 60?

18. What is $\frac{1}{10}$ of 20? 25? 36? 43? 55? 67?
76? 84? 91? 102? 115? 123? 125? 117? 109?
98? 89? 72? 27? 33? 45? 58? 61? 77?

19. If a yard of tape costs 3 cents, how much can
you buy for 5 cents? for 7 cents? 8 cents? 11 cents?
14 cents? 16 cents?

20. If a yard of broadcloth costs 4 dollars, what
would $\frac{1}{4}$ of a yard cost? $\frac{2}{4}$ of a yard? $\frac{3}{4}$ of a yard? 1
yard and $\frac{1}{4}$? 2 yards and $\frac{1}{4}$? 3 yards and $\frac{1}{4}$?

21. If an orange is worth 5 cents, what would $\frac{1}{5}$ of an orange be worth? What would $\frac{2}{5}$ be worth? $\frac{3}{5}$? $\frac{4}{5}$? 1 orange and $\frac{1}{5}$? 2 oranges and $\frac{2}{5}$? 3 and $\frac{1}{5}$? 4 and $\frac{2}{5}$?

22. A fathom is 6 feet. What part of a fathom is 1 foot? 2 feet? 3 feet? 4 feet? 5 feet? 7 feet? 9 feet? 11 feet? 13 feet? 17 feet? 29 feet?

23. How many apples, at 7 cents a peck, could you buy for 8 cents? for 9 cents? 10 cents? 11 cents? 15 cents? 18 cents? 23 cents? 27 cents? 39 cents?

24. When sugar is worth 8 cents a pound, what is $\frac{1}{8}$ of a pound worth? $\frac{2}{8}$ of a pound? $\frac{3}{8}$ of a pound? $\frac{7}{8}$ of a pound? $\frac{5}{8}$ of a pound? $\frac{6}{8}$ of a pound? $\frac{8}{8}$ of a pound?

25. When flour is worth 16 dollars a barrel, what is $\frac{1}{8}$ of a barrel worth? $\frac{2}{8}$ of a barrel? $\frac{3}{8}$ of a barrel? $\frac{7}{8}$ of a barrel? $\frac{5}{8}$ of a barrel? $\frac{6}{8}$ of a barrel? $\frac{8}{8}$ of a barrel?

26. When starch is 9 cents a pound, what part of a pound can you buy for 1 cent? for 3 cents? 5 cents? 8 cents? 7 cents? 11 cents? 17 cents? 20 cents? 33 cents?

27. What part of a cent is 1 mill? 2 mills? 7 mills? 9 mills? 3 mills? 8 mills? 13 mills? 17 mills? 6 mills? 24 mills? 5 mills? 55 mills? 87 mills?

28. What is $\frac{1}{10}$ of a dime? $\frac{2}{10}$ of a dime? $\frac{9}{10}$ of a dime? $\frac{7}{10}$ of a dime? $\frac{1}{5}$ of a dime? $\frac{2}{5}$ of a dime? $\frac{3}{5}$ of a dime? 3 dimes and $\frac{2}{10}$ of a dime? 2 dimes and $\frac{9}{10}$ of a dime?

29. How many quarts in 7 pints? In 15 pints? In 25 pints? In 11 pints? In 19 pints?

30. How many pints in 6 gills? In 11 gills? In 17 gills? In 33 gills? In 37 gills? In 35 gills? In 49 gills?

31. How many gallons in 7 quarts? In 13 quarts? In 29 quarts? In 34 quarts? In 38 quarts? In 50 quarts?

32. How many feet in 27 inches? 19 inches? In 33 inches? In 45 inches? In 110 inches? In 140 inches? In 88 inches?

33. When pears are sold two for a cent, how many cents would 18 pears cost?

34. When peaches are sold three for a cent, how many cents would 36 peaches cost?

35. If a man can build a wall in 56 hours, how many days will be required if he works 8 hours a day? If he works 7 hours a day?

36. If 1 man can build a fence in 48 hours, in how many hours could 6 men build it? 8 men? 5 men? 9 men? 12 men? 4 men? 7 men? 10 men?

37. How many barrels of flour, at 7 dollars a barrel, can be bought for 35 dollars? How many at 5 dollars a barrel? At 6 dollars a barrel?

38. Two coaches are travelling in the same direction, and are 11 miles apart. In what time will the hind one overtake the other, if it gains 2 miles an hour?

89. A man gave 72 dollars for 9 tons of coal. What was the cost of the coal per ton?

40. A man paid 56 dollars for coal, when coal was worth 7 dollars a ton. How many tons did he buy? How many tons could he have bought for 67 dollars? For 55 dollars? For 32 dollars?

99. FRACTIONS.—CONTINUED.

1. In 10 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10?

2. In 11 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11?

3. In 12 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12?

4. In 13 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13?

5. In 14 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14?

6. In 15 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15?

7. In 16 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15? 16?

8. In 17 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15? 16? 17?

9. In 18 there are how many times 1? 2? 3? 4? 5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15? 16? 17? 18?

10. In 19 there are how many times 1? 2? 3? 4?
5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15? 16?
17? 18? 19?

11. In 20 there are how many times 1? 2? 3? 4?
5? 6? 7? 8? 9? 10? 11? 12? 13? 14? 15?
16? 17? 18? 19? 20?

12. In 21 there are how many times 1? 2? 4? 6?
8? 10? 12? 3? 7? 11? 5? 9?

13. In 24 there are how many times 9? 5? 11?
7? 3? 12? 10? 8? 6? 4? 2? 1?

14. In 27 there are how many times 3? 9? 5? 7?
11? 2? 4? 1? 12? 8? 6? 10?

15. In 22 there are how many times 6? 4? 1? 3?
12? 7? 9? 2? 10? 5? 11? 8?

16. In 28 there are how many times 10? 7? 12?
8? 5? 1? 11? 4? 2? 6? 3? 9?

17. In 26 there are how many times 3? 5? 9? 4?
10? 2? 6? 12? 1? 7? 8? 11?

18. In 23 there are how many times 8? 7? 2? 1?
9? 11? 3? 10? 4? 12? 5? 6?

19. In 25 there are how many times 9? 11? 4?
10? 6? 8? 5? 3? 12? 1? 7? 2?

20. In 29 there are how many times 9? 11? 10?
5? 7? 3? 12? 8? 6? 4? 1? 2?

21. In 38 there are how many times 1? 3? 12?
8? 4? 6? 10? 7? 11? 5? 9?

22. In 37 there are how many times 9? 5? 11? 7?
10? 6? 4? 8? 12? 3? 1?

23. In 30 there are how many times 3? 8? 6? 7?
5? 1? 12? 4? 10? 9? 11?

24. In 36 there are how many times 9? 11? 10?
4? 12? 1? 5? 7? 6? 8? 3?

25. In 39 there are how many times 6? 3? 8? 1?
11? 5? 9? 7? 10? 4? 12?

26. In 31 there are how many times 12? 7? 10?
9? 6? 5? 3? 8? 1? 4? 11?

27. In 34 there are how many times 1? 12? 3? 8?
4? 7? 6? 10? 5? 11? 9?

28. In 37 there are how many times 7? 5? 9? 1?
3? 12? 8? 4? 11? 6? 10?

29. In 32 there are how many times 10? 3? 12?
8? 1? 4? 6? 11? 9? 5? 7?

30. In 35 there are how many times 7? 5? 9? 6?
11? 4? 10? 1? 8? 12? 3?

31. In 40 there are how many times 1? 5? 8?
12? 6? 10? 7? 11? 9?

32. In 50 there are how many times 5? 9? 7? 1?
12? 8? 11? 6? 10?

33. In 57 there are how many times 12? 9? 10?
7? 1? 11? 5? 8? 6?

34. In 45 there are how many times 1? 8? 6? 5?
12? 10? 7? 9? 11?

35. In 51 there are how many times 5? 1? 8? 6?
11? 9? 10? 7? 12?

36. In 53 there are how many times 11? 9? 12?
1? 8? 6? 10? 5? 7?

37. In 42 there are how many times 8? 1? 5? 7?
6? 11? 9? 12? 10?

38. In 48 there are how many times 6? 1? 5? 8?
10? 9? 12? 7? 11?

39. In 41 there are how many times 11? 8? 10?
5? 7? 12? 1? 6? 9?

40. In 52 there are how many times 8? 1? 12?
7? 10? 5? 9? 11? 6?

41. In 54 there are how many times 5? 1? 8? 6?
12? 10? 7? 9? 11?

42. In 56 there are how many times 11? 7? 10?
9? 12? 5? 6? 8? 1?

43. In 44 there are how many times 8? 6? 9? 7?
10? 1? 12? 5? 11?

44. In 46 there are how many times 11? 8? 1?
5? 10? 6? 12? 7? 9?

45. In 55 there are how many times 12? 9? 10?
1? 8? 6? 5? 11? 7?

46. In 60 there are how many times 7? 1? 5? 9?
12? 8? 6? 11? 10?

47. In 49 there are how many times 10? 1? 11?
8? 5? 6? 12? 9? 7?

48. In 43 there are how many times 7? 1? 12?
8? 10? 9? 11? 6? 5?

49. In 58 there are how many times 9? 6? 8? 5?
10? 7? 11? 1? 12?

50. In 47 there are how many times 8? 1? 5? 9?
11? 7? 10? 6? 12?

51. In 64 there are how many times 10? 12? 11?
7? 9? 1? 8? 6? 5?

52. In 59 there are how many times 6? 1? 12?
5? 11? 9? 7? 10? 8?

53. In 61 there are how many times 9? 7? 6? 5?
10? 1? 11? 8? 12?

54. In 70 there are how many times 12? 9? 11?
8? 5? 1? 7? 10? 6?

55. In 63 there are how many times 8? 5? 1? 7?
12? 9? 11? 6? 10?

56. In 65 there are how many times 1? 12? 6?
5? 10? 9? 7? 11? 8?

57. In 62 there are how many times 5? 9? 7? 6?
10? 1? 11? 8? 12?

58. In 77 there are how many times 1? 6? 12?
8? 10? 7? 11? 9?

59. In 65 there are how many times 9? 11? 7?
10? 8? 12? 6? 1?

60. In 71 there are how many times 8? 7? 9? 6?
12? 1? 11? 10?

61. In 68 there are how many times 11? 8? 12?
9? 6? 10? 7? 1?

62. In 75 there are how many times 1? 9? 11?
7? 12? 8? 6? 10?

63. In 78 there are how many times 1? 10? 12?
6? 9? 11? 7? 8?

64. In 72 there are how many times 6? 9? 11?
8? 12? 1? 7? 10?

65. In 76 there are how many times 7? 12? 10?
6? 1? 8? 11? 9?

66. In 66 there are how many times 8? 6? 7? 1?
10? 9? 12? 11?

67. In 69 there are how many times 12? 8? 7?
11? 9? 1? 10? 6?

68. In 74 there are how many times 11? 6? 10?
7? 9? 1? 12? 8?

69. In 67 there are how many times 1? 7? 8? 6?
10? 9? 12? 11?

70. In 73 there are how many times 7? 11? 8?
12? 9? 10? 1? 6?

71. In 89 there are how many times 1? 7? 10?
12? 9? 11? 8?

72. In 81 there are how many times 8? 11? 9?
12? 10? 7? 1?

73. In 85 there are how many times 7? 10? 12?
9? 11? 1? 8?

74. In 79 there are how many times 1? 7? 9? 8?
10? 12? 11?

75. In 90 there are how many times 10? 12? 11?
7? 9? 8? 1?

76. In 80 there are how many times 7? 11? 1?
9? 10? 8? 12?

77. In 91 there are how many times 9? 12? 10?
1? 8? 11? 7?

78. In 83 there are how many times 11? 10? 12?
1? 9? 7? 8?

79. In 87 there are how many times 7? 9? 8? 11?
10? 12? 1?

80. In 82 there are how many times 10? 7? 12?
9? 11? 1? 8?

81. In 88 there are how many times 1? 11? 7?
8? 12? 9? 10?

82. In 84 there are now many times 7? 12? 9?
11? 1? 10? 8?

83. In 86 there are how many times 10? 12? 11?
8? 1? 9? 7?

84. In 99 there are how many times 1? 8? 12?
6? 11? 10? 7? 9?

85. In 96 there are how many times 9? 7? 10?
1? 12? 8? 11? 6?

86. In 93 there are how many times 6? 1? 9? 7?
12? 10? 8? 11?

87. In 100 there are how many times 10? 8? 12?
6? 11? 1? 9? 7?

88. In 92 there are how many times 7? 11? 6?
8? 12? 1? 10? 9?

89. In 98 there are how many times 8? 10? 1?
11? 7? 12? 9? 6?

90. In 95 there are how many times 7? 1? 6? 9?
12? 8? 11? 10?

91. In 94 there are how many times 10? 7? 12?
6? 11? 9? 1? 8?

92. In 97 there are how many times 6? 11? 8?
12? 1? 9? 7? 10?

30. FRACTIONS.—CONTINUED.

1. A man bought 2 combs at 3 cents apiece, and paid for them with pears at 2 cents apiece. How many pears did it take? 2 times 3 are how many times 2?

2. A man bought 3 barrels of flour at 5 dollars a barrel, in exchange for apples at 3 dollars a barrel. How many barrels of apples did it take? 3 times 5 are how many times 3? How many times 2? 7? 4? 6? 8?

3. How much velvet at 2 dollars a yard, must be given in exchange for 6 yards of broadcloth at 4 dollars a yard? 6 times 4 are how many times 2? How many times 5? 8? 3? 6? 12? 7? 10? 9?

4. How much wood at 3 dollars a cord, must be given in exchange for 6 hundred-weight of sugar at 6 dollars a hundred-weight? 6 times 6 are how many times 3? How many times 9? 4? 12? 8? 5? 7? 11? 9? 10?

5. How much lead at 8 dollars a ton, must be given for 10 tons of coal at 4 dollars a ton? 10 times 4 are how many times 8? How many times 10? 5? 7? 11? 9? 6? 12?

6. 7 times 9 are how many times 7? 5? 11? 6? 12? 8? 10?

7. 4 times 8 are how many times 4? 3? 9? 5? 10? 12? 7? 11? 6?

8. 9 times 5 are how many times 9? 8? 11? 10? 4? 7? 12? 6?

9. 7 times 6 are how many times 7? 5? 4? 9?
12? 6? 10? 8? 11?

10. 7 times 7 are how many times 4? 8? 12? 5?
11? 9? 6? 10?

11. 8 times 8 are how many times 5? 9? 12? 6?
10? 7? 11?

12. 3 times 9 are how many times 3? 4? 6? 7?
10? 12? 5? 8? 11?

13. 5 times 5 are how many times 2? 3? 4? 7?
8? 9? 6? 10? 11? 12?

14. 9 times 8 are how many times 9? 6? 12? 7?
10? 11?

15. 6 times 12 are how many times 6? 9? 11? 7?
10? 8?

16. 11 times 5 are how many times 11? 6? 8? 9?
7? 10?

17. 4 times 9 are how many times 4? 3? 6? 12?
5? 11? 10? 7? 8?

18. 7 times 8 are how many times 7? 5? 10? 6?
12? 9? 11?

19. 6 times 6 are how many times 3? 4? 5? 7?
8? 10? 11? 9? 12?

20. 8 times 5 are how many times 8? 4? 12? 6?
11? 10? 7? 9?

21. 4 times 3 and $\frac{2}{3}$ of 3 are how many times 2?
7? 4? 9? 8? 6? 11? 10? 5? 12?

22. 2 times 8 and $\frac{5}{8}$ of 8 are how many times 7?
3? 5? 10? 2? 9? 4? 6? 12? 11?

23. 7 times 5 and $\frac{1}{5}$ of 5 are how many times 6? 3?
12? 4? 9? 11? 7? 10? 8?

24. 3 times 6 and $\frac{1}{3}$ of 6 are how many times 2?
11? 3? 7? 4? 8? 12? 5? 9? 10?

25. 5 times 8 and $\frac{1}{4}$ of 8 are how many times 4?
11? 5? 7? 9? 12? 6? 10?

26. 8 times 3 and $\frac{1}{2}$ of 3 are how many times 2? 8?
9? 12? 4? 10? 6? 7? 11? 5?

27. 3 times 12 and $\frac{1}{12}$ of 12 are how many times 7?
6? 21? 2? 14? 8? 8? 5? 9? 10? 11?

28. 4 times 8 and $\frac{1}{8}$ of 8 are how many times 5?
7? 4? 3? 11? 9? 6? 10? 2? 12?

29. 7 times 9 and $\frac{1}{9}$ of 9 are how many times 11?
6? 7? 8? 5? 12? 10? 33? 2?

30. 5 times 12 and $\frac{1}{12}$ of 12 are how many times 9?
7? 21? 3? 5? 6? 10? 8? 7? 15?

31. 4 times 4 and $\frac{1}{4}$ of 4 are how many times 2?
9? 6? 3? 10? 7? 5? 12? 8? 11?

32. 8 times 9 and $\frac{1}{9}$ of 9 are how many times 25?
3? 15? 5? 8? 6? 12? 7? 10? 11?

33. 7 times 10 and $\frac{1}{10}$ of 10 are how many times 7?
8? 6? 9? 5? 14? 12? 10? 11?

34. 8 times 7 and $\frac{1}{7}$ of 7 are how many times 8?
30? 2? 15? 4? 10? 6? 12? 5? 20? 3? 9? 11?

35. 5 times 6 and $\frac{1}{6}$ of 6 are how many times 11?
3? 5? 8? 4? 10? 12? 7? 2? 16?

36. 7 times 4 and $\frac{1}{4}$ of 4 are how many times 7?
15? 2? 6? 5? 9? 12? 3? 10? 8? 11?

37. 4 times 12 and $\frac{1}{12}$ of 12 are how many times 4?
7? 10? 6? 9? 5? 8? 11?

38. 8 times 5 and $\frac{2}{5}$ of 5 are how many times 21?
2? 8? 10? 12? 14? 3? 7? 6? 4? 9? 11?

39. 8 times 7 and $\frac{4}{7}$ of 7 are how many times 31?
2? 5? 8? 15? 4? 12? 10? 6? 20? 3? 11? 9?

40. 10 times 3 and $\frac{1}{3}$ of 3 are how many times 10?
15? 2? 4? 8? 12? 9? 5? 11? 6? 7?

41. 12 times 2 and $\frac{1}{2}$ of 2 are how many times 12?
5? 8? 11? 3? 6? 9? 4? 7? 10? 15?

42. 11 times 7 and $\frac{4}{7}$ of 7 are how many times 11?
8? 10? 4? 20? 2? 40? 5? 16? 9? 12? 50?

43. 5 times 5 and $\frac{4}{5}$ of 5 are how many times 4?
7? 14? 2? 9? 3? 11? 8? 12? 7? 10? 6?

44. 9 times 8 and $\frac{5}{8}$ of 8 are how many times 9?
7? 11? 6? 12? 10? 15? 5? 11? 25? 3?

45. 7 times 7 and $\frac{1}{7}$ of 7 are how many times 10?
5? 25? 2? 4? 6? 8? 11? 9? 12?

46. 6 times 6 and $\frac{4}{6}$ of 6 are how many times 8?
5? 10? 4? 2? 20? 13? 3? 9? 11? 7? 12?

47. 9 times 9 and $\frac{3}{9}$ of 9 are how many times 21?
4? 10? 8? 42? 2? 25? 12? 7? 14? 6? 16?
5? 11? 28? 3?

48. 10 times 4 and $\frac{4}{4}$ of 4 are how many times 10?
7? 14? 3? 6? 9? 12? 8? 5? 11? 4?

49. 2 times 12 and $\frac{4}{12}$ of 12 are how many times 2?
14? 7? 4? 9? 3? 5? 11? 6? 8?

50. 5 times 8 and $\frac{5}{8}$ of 8 are how many times 5?
9? 15? 3? 12? 4? 11? 6? 10? 7?

31. FRACTIONS.—CONTINUED.

1. How many hours in $\frac{3}{4}$ of a day?
2. How many shillings in $\frac{4}{5}$ of a pound?
3. How many inches in $\frac{5}{8}$ of a foot?
4. How many ounces in $\frac{5}{8}$ of a pound Avoirdupois?
5. How many pence in $\frac{3}{4}$ of a shilling?
6. How many dollars in $\frac{4}{5}$ of an eagle?
7. How many pecks in $\frac{2}{3}$ of a bushel?

MODEL.— $\frac{1}{3}$ of a bushel is $\frac{1}{3}$ of 8 pecks, or $1\frac{1}{3}$ pecks, and $\frac{2}{3}$ of a bushel is twice as much, or $2\frac{2}{3}$ pecks.

ANOTHER SOLUTION.— $\frac{2}{3}$ of a bushel is the same as $\frac{1}{3}$ of 2 bushels. $\frac{1}{3}$ of 2 bushels is $\frac{1}{3}$ of 16 pecks, which is $2\frac{2}{3}$ pecks.

8. How many quarts in $\frac{2}{3}$ of a gallon?
9. How many days in $\frac{2}{3}$ of a week?
10. How many gills in $\frac{5}{8}$ of a pint?
11. How many farthings in $\frac{7}{8}$ of a penny?
12. How many minutes in $1\frac{1}{2}$ of an hour?
13. How many seconds in $\frac{8}{11}$ of a minute?
14. How many pints in $\frac{2}{3}$ of a gallon?
15. How many months in $\frac{2}{3}$ of a year?
16. How many mills in $\frac{4}{5}$ of a cent?
17. How many grains in $\frac{7}{10}$ of a pennyweight?
18. How many quarts in $\frac{4}{5}$ of a peck?
19. How many cents in $\frac{2}{3}$ of a dime?
20. How many dimes in $1\frac{1}{2}$ of a dollar?
22. In $\frac{4}{5}$ of a day, how many hours, minutes, and seconds?

MODEL.— $\frac{1}{11}$ of a pound is $1\frac{9}{11}$ shillings, and $\frac{6}{11}$ of a pound is 8 times as much, or $14\frac{6}{11}$ shillings. $\frac{1}{11}$ of a shilling is $1\frac{1}{11}$ pence, and $\frac{6}{11}$ of a shilling is 6 times as much, or $6\frac{6}{11}$ pence. $\frac{1}{11}$ of a penny is $\frac{4}{11}$ of a farthing, and $\frac{6}{11}$ of a penny is 6 times as much, or $2\frac{2}{11}$ farthings. The answer is, therefore, 14 shillings, 6 pence, and $2\frac{2}{11}$ farthings.

21. In $\frac{8}{11}$ of a pound, how many shillings, pence, and farthings?

23. In $\frac{2}{3}$ of a yard, how many feet and inches?

24. In $\frac{7}{9}$ of an eagle, how many dollars, dimes, and cents?

25. In $\frac{2}{3}$ of a bushel, how many pecks and quarts?

26. In $\frac{4}{5}$ of a gallon, how many quarts, pints, and gills?

27. In $\frac{2}{3}$ of a day, how many hours, minutes, and seconds?

28. In $\frac{5}{8}$ of a bushel, how many pecks and quarts?

29. In $\frac{3}{4}$ of a yard, how many feet and inches?

30. In $\frac{7}{12}$ of a pound, how many shillings and pence?

32. FRACTIONS.—CONTINUED.

1. What part of £2 7s. 6d., is 3s. 8d.?

MODEL.—£2 7s. 6d. are equivalent to 570d., and 3s. 8d. are equivalent to 44d. 1d. would be $\frac{1}{570}$ of 570d., and 44d. is 44 times as much, or $\frac{44}{570}$ of 570d.

2. How many $\frac{1}{2}$ hours in a day? How many in $3\frac{1}{2}$ hours? Then what part of a day is $3\frac{1}{2}$ hours?

3. How many $\frac{1}{3}$ hours in a day? How many in $4\frac{2}{3}$ hours? Then what part of a day is $4\frac{2}{3}$ hours?

4. What part of an hour is $29\frac{1}{4}$ minutes?

5. What part of 2 hours and 17 minutes, is 5 hours and 10 minutes?

6. What part of 5 days and 13 hours, is 3 days and 8 hours?

7. What part of a year is $2\frac{1}{2}$ months? $5\frac{2}{3}$ months? $1\frac{1}{4}$ months? $7\frac{2}{5}$ months? $3\frac{1}{2}$ months? $6\frac{7}{10}$ months?

8. What part of 2 years and 3 months, is 1 year and 7 months? $3\frac{1}{2}$ years? $2\frac{1}{3}$ years?

9. What part of 7 yards, 1 foot, and 6 inches, is 2 yards, 2 feet, and 3 inches?

10. What part of 4 pounds and 14 ounces, is 5 pounds and 9 ounces?

11. What part of 6 feet 7 inches, is 3 feet 11 inches?

12. What part of £1 2s. 3d. is 4s. 9d.?

13. What part of 5 shillings is 11 pence and 3 farthings?

14. What part of 2 eagles is 5 dollars and 7 dimes?

15. What part of 9 cents is 8 dollars and 8 cents?

16. What part of 13 yards and 3 quarters, is 5 yards and a half?

17. What part of 4 bushels and 1 peck, is 2 bushels and 3 pecks?

18. What part of 5 bushels is 2 pecks and 7 quarts?

19. What part of a shilling is 11 pence and 2 farthings? What part of a pound?

20. What part of 7 gallons, 2 quarts, and 1 pint, is 8 gallons and 3 quarts?

21. What part of 1 gallon, 1 pint, and 3 gills, is 2 quarts?

22. What part of £5 is 9s. 11d.?

23. What part of £10 is $4\frac{1}{2}d.$? $3\frac{1}{4}d.$? 12s. 6d.?

24. What part of a week is 5 days and 9 hours?

25. What part of 2 weeks and 6 days, is 3 days and 8 hours?

33. FRACTIONS.—CONTINUED.

1. $\frac{3}{4}$ of 14 is $\frac{2}{5}$ of what number?

MODEL.— $\frac{1}{4}$ of 14 is 2. $\frac{3}{4}$ of 14 is 6. If 6 is $\frac{2}{5}$ of the number required, $\frac{1}{2}$ of 6, or 3, must be $\frac{1}{5}$ of the number. If 3 is $\frac{1}{5}$, the whole number must be 5 times 3, or 15.

2. $\frac{1}{2}$ of 8 is $\frac{1}{4}$ of what number?

3. $\frac{2}{3}$ of 6 is $\frac{1}{2}$ of what number?

4. $\frac{1}{4}$ of 16 is $\frac{2}{7}$ of what number?

5. $\frac{2}{3}$ of 9 is $\frac{3}{8}$ of what number?

6. $\frac{1}{4}$ of 20 is $\frac{5}{8}$ of what number?

7. $\frac{3}{8}$ of 30 is $\frac{2}{10}$ of what number?

8. $\frac{2}{7}$ of 28 is $\frac{4}{14}$ of what number?

9. $\frac{1}{4}$ of 28 is $\frac{3}{8}$ of what number?

10. $\frac{3}{8}$ of 40 is $\frac{5}{8}$ of what number?

11. $\frac{5}{8}$ of 24 is $1\frac{1}{4}$ of what number?

12. $\frac{1}{8}$ of 26 is $\frac{1}{4}$ of what number?

13. $\frac{2}{3}$ of 20 is $\frac{4}{3}$ of what number?
14. $\frac{2}{9}$ of 18 is $\frac{4}{10}$ of what number?
15. $\frac{5}{8}$ of 27 is $\frac{3}{8}$ of what number?
16. $\frac{4}{9}$ of 54 is $\frac{8}{9}$ of what number?
17. $\frac{1}{8}$ of 72 is $\frac{6}{11}$ of what number?
18. $\frac{7}{8}$ of 64 is $\frac{8}{7}$ of what number?
19. $\frac{5}{8}$ of 48 is $\frac{10}{9}$ of what number?
20. $\frac{7}{9}$ of 45 is $\frac{5}{12}$ of what number?
21. $\frac{3}{10}$ of 60 is $\frac{2}{11}$ of what number?
22. $\frac{7}{10}$ of 90 is $\frac{7}{12}$ of what number?
23. $\frac{10}{9}$ of 18 is $\frac{12}{11}$ of what number?
24. $\frac{2}{7}$ of 14 is $\frac{8}{8}$ of what number?
25. $\frac{7}{8}$ of 12 is $\frac{2}{3}$ of what number?
26. $\frac{8}{9}$ of 15 is $\frac{5}{9}$ of what number?
27. $\frac{10}{9}$ of 21 is $\frac{4}{9}$ of what number?

34. FRACTIONS.—CONTINUED.

1. $\frac{5}{7}$ of 28 is $\frac{4}{5}$ of how many fifths of 35?

MODEL.— $\frac{1}{7}$ of 28 is 4. $\frac{5}{7}$ of 28 is 20. If 20 is $\frac{4}{5}$ of some number, $\frac{1}{5}$ of 20, or 4, is $\frac{1}{5}$ of that number. If 4 is $\frac{1}{5}$ of some number, that number is 20 times 4 or 80. 80 is how many fifths of 35? $\frac{1}{5}$ of 35 is 7. 7 is contained in 80, 11 times and $\frac{3}{7}$ of a time, or $11\frac{3}{7}$ times. Therefore 80 is $11\frac{3}{7}$ fifths of 35.

2. $\frac{3}{8}$ of 35 is $\frac{7}{8}$ of how many thirds of 6?
3. $\frac{1}{2}$ of 18 is $\frac{2}{3}$ of how many fifths of 20?
4. $\frac{2}{3}$ of 9 is $\frac{3}{8}$ of how many fourths of 24?
5. $\frac{1}{2}$ of 16 is $\frac{2}{3}$ of how many sixths of 36?

6. $\frac{4}{8}$ of 25 is $\frac{11}{11}$ of how many eighths of 24?
7. $\frac{7}{8}$ of 32 is $\frac{4}{5}$ of how many sevenths of 35?
8. $\frac{5}{11}$ of 33 is $\frac{2}{8}$ of how many ninths of 36?
9. $\frac{4}{5}$ of 45 is $\frac{6}{8}$ of how many tenths of 50?
10. $\frac{6}{8}$ of 64 is $\frac{4}{5}$ of how many twelfths of 132?
11. $\frac{2}{7}$ of 84 is $\frac{8}{11}$ of how many fourths of 32?
12. $\frac{6}{8}$ of 81 is $\frac{2}{5}$ of how many fifths of 35?
13. $\frac{8}{8}$ of 56 is $\frac{7}{8}$ of how many sixths of 18?
14. $\frac{7}{8}$ of 63 is $\frac{4}{8}$ of how many thirds of 33?
15. $\frac{4}{5}$ of 56 is $\frac{2}{5}$ of how many sevenths of 42?
16. $\frac{9}{11}$ of 121 is $\frac{1}{8}$ of how many eighths of 80?
17. $\frac{6}{8}$ of 54 is $\frac{4}{8}$ of how many twelfths of 72?
18. $\frac{4}{5}$ of 81 is $\frac{1}{11}$ of how many elevenths of 132?
19. $\frac{7}{11}$ of 121 is $\frac{1}{1}$ of how many tenths of 40?
20. $\frac{7}{12}$ of 96 is $\frac{8}{10}$ of how many ninths of 54?
21. $\frac{2}{4}$ of 48 is $\frac{1}{11}$ of how many fifths of 45?
22. $\frac{4}{5}$ of 70 is $\frac{5}{12}$ of how many elevenths of 99?
23. $\frac{6}{8}$ of 99 is $\frac{1}{2}$ of how many fourths of 28?
24. $\frac{2}{3}$ of 42 is $\frac{2}{8}$ of how many eighths of 48?
25. $\frac{1}{2}$ of 144 is $\frac{1}{7}$ of how many sixths of 42?
26. $\frac{7}{8}$ of 72 is $\frac{9}{11}$ of how many ninths of 63?

35. MISCELLANEOUS EXAMPLES.

1. Two men start from Boston, and travel in opposite directions, one at the rate of $5\frac{1}{2}$ miles in an hour, and the other at the rate of $6\frac{1}{2}$ miles an hour. How far apart will they be in 1 hour? In 2 hours? In hours? In 8 hours?

2. How much wheat will be required to give 9 men $4\frac{1}{2}$ bushels a piece?

3. Two men bought a barrel of flour, towards which one gave 2 dollars and the other 3 dollars. What part of the whole should each receive?

4. A bankrupt is able to pay only 3 shillings and 6 pence on a pound. How much can he pay on a debt of 2 pounds? On a debt of 4 pounds? of 5 pounds? of 7 pounds?

5. How many bushels of wheat, at 7 shillings a bushel, must be given for 12 yards of broadcloth at 5 dollars a yard?

6. A man paid 35 dollars to some laborers, giving 2 dollars to each boy, and 3 dollars to each man, and the number of boys and men was equal. How many were there of each?

7. If 9 horses consume 7 bushels of oats during the winter, how many bushels will 11 horses consume in the same time?

8. When the interest of 1 dollar is 6 cents a year, what is the annual interest of 20 dollars? Of 90 dollars? Of 150 dollars? Of 235 dollars?

9. Two men start together and travel in the same direction, one at the rate of $6\frac{1}{2}$ miles an hour, and the other at the rate of $7\frac{1}{2}$ miles an hour. How far apart will they be in 1 hour? In 5 hours? In 7 hours? In 12 hours?

10. If a stock of provisions will serve 5 men 9 days, how long will it serve 1 man? 3 men? 4 men? 7 men? 9 men? 12 men? 6 men? 11 men?

11. How many 8 cent loaves would be equivalent to 7 six cent loaves? How many 5 cent loaves? How many 10 cent loaves? How many 4 cent loaves?

12. When the interest of 1 dollar is 6 cents a year, what would it be for 2 years? What would be the interest of 7 dollars for 2 years? Of 5 dollars for 3 years? Of 3 dollars for 4 years? Of 87 dollars for 2 years?

13. If a stock of provisions would serve 7 men 8 days, how many men would it serve 1 day? 4 days? 7 days? 14 days?

14. Three men hired a pasture for 40 dollars. A. put in 5 cows, B. 7 cows, and C. 8 cows. What part of the whole number did each put in? How much must each pay?

15. A. could do a piece of work in 2 days, and B. could do it in 4 days. What part could each do in 1 day? What part could they both do in 1 day? In what time could they do the whole, if they both should work together?

16. If 9 barrels of flour cost 48 dollars, what would 7 barrels cost? 11 barrels? 5 barrels?

17. If one man could build a wall in 4 days, and another man could build it in 6 days, what part could they both build in 1 day? In what time could they both build the whole?

18. If a man can earn 150 dollars in 25 weeks, how much can he earn in 7 weeks? In 13 weeks? In 19 weeks?

19. In what time would 5 men do a piece of work, which 8 men could do in 15 days?

20. A coach has travelled 56 miles in 7 hours. In what time would it travel 240 miles at the same rate?

21. If a stock of provisions would supply a company of soldiers 9 months, allowing each man 16 ounces a day, how much should be allowed per day in order that the provisions may last 12 months? 10 months? 15 months?

22. A pole 6 feet long is observed to cast a shadow 4 feet long. What is the height of a tree which casts a shadow 45 feet long, at the same time and place?

23. A., B., and C. hired a pasture for 48 dollars. A. put in 2 horses, B. 3 horses, and C. 5 horses. How much ought each to pay?

24. If 7 men can build a wall 18 rods long in 8 days, how many men will it take to build a wall 36 rods long in 4 days?

25. If 5 men in 3 days consume 10 dollars' worth of provision, how long would 30 dollars' worth of provision serve 8 men?

26. The top of Bunker Hill Monument is 282 feet above the level of the sea. Required its height in yards?

27. George Washington was born A. D. 1732, and died when he was 67 years old. In what year did he die?

28. A., B., and C. trade together, and gain 75 dollars. A. contributed 2 parts of the stock, B. 3

parts, and C. 5 parts. What was each man's share of the gain?

29. When the interest of 100 dollars is 6 dollars a year, what is the interest for 1 month? For 2 months? 6 months? 5 months? 8 months? 4 months? 3 months? 11 months? 7 months? 10 months?

30. Benjamin Franklin was born A. D. 1706, and died A. D. 1790. How old was he when he died?

31. A cistern has 3 pipes. The first would fill it in 2 hours, the second would fill it in 4 hours, and the third would empty it in 3 hours. What part of the whole would run through each pipe in one hour? What part of the cistern would be filled in one hour, and in what time would the cistern be filled, if the pipes were all open?

32. A man gave 27 dollars for a suit of clothes. The pantaloons cost twice as much as the vest, and the coat cost three times as much as the pantaloons. What was the price of each?

33. If 7 men can build 13 rods of wall in 12 days, how many men could build 26 rods in 4 days?

34. If the interest for 1 year is 6 per cent., or $\frac{6}{100}$ of the principal,* what is the interest for 2 months? For 1 month? 5 months? 9 months? 3 years? 7 years? 5 years and 3 months? 2 years and 4 months? 4 years and 6 months? 6 years and 8 months? 7 years and 7 months?

* Explain the meaning of the terms "per cent." and "principal."

35. John Adams was born in October, 1735, and Thomas Jefferson in April, 1743. Which was the older, and how much?

36. If the interest for 2 months or 60 days, is 1 per cent., what is the interest for 6 days? For 12 days? 15 days? 10 days? 20 days? 18 days? 24 days? 9 days? 21 days? 33 days? 27 days? 42 days? 8 days? 14 days? 50 days? 25 days? 16 days? 37 days? 59 days? 45 days?

37. A horse is worth 11 times as much as the saddle, and the horse and saddle together are worth 132 dollars. What is the value of each?

38. Sir Isaac Newton was born A. D. 1642. How many years have elapsed since that time?

39. A tower is $\frac{1}{2}$ and $\frac{2}{3}$ above ground, and 20 feet under ground. What is its height?

40. At 6 per cent., what is the interest of 125 dollars for 3 years? For 2 years and 6 months? For 4 years and 3 months? For 3 years and 9 months?

41. John Hancock died A. D. 1793, aged 56 years. In what year was he born?

42. What is the interest of 150 dollars for 1 year and 11 months, at 6 per cent.? for 2 years, 1 month, and 15 days? 3 years, 4 months, and 24 days?

43. A pole has $\frac{1}{2}$ its length in the water, $\frac{1}{3}$ in the ground, and 8 feet above water. How long is it?

44. The Douglas pine is sometimes found in Oregon 230 feet in height, and the lowest limb is 120 feet

from the ground. What is the distance from the lowest limb to the top of such a tree?

45. In a certain orchard $\frac{2}{3}$ of the fruit trees bear apples, $\frac{1}{3}$ of them bear peaches, $\frac{1}{12}$ of them bear pears, 12 bear cherries, and 8 bear plums. How many trees are there in the orchard, and how many of each kind?

46. If to a certain number its half be added, the sum will be 36. What is the number?

47. If a man drinks 9 tons of coffee in 32 years, how much would he drink in 4 years?

48. What number is that, to which, if we add $\frac{1}{3}$ of itself, the sum will be 80?

49. What number is that, to which, if we add $\frac{1}{4}$ of itself, the sum will be 250?

50. A Dutch florin is worth 40 cents. What is the value of $\frac{3}{4}$ of a florin?

51. What number is that, to which, if we add $\frac{1}{5}$ of itself, the sum will be 84?

52. What number is that, to which, if we add its half, its third, and its fourth, the sum will be 75?

53. Three and a half pounds of good oak bark are sufficient to tan 1 pound of leather. How much would be required for tanning 13 pounds of leather?

54. What number is that, to which, if we add 7 more than its third and its fourth, the sum will be 64?

55. A man going to market, was met by another, who said, "Good morrow, neighbor, with your hundred geese." He replied, "I have not a hundred, but

if I had $\frac{1}{2}$ as many more, and 2 geese and a half, I should have a hundred." How many had he?

56. A span is 9 inches. How many spans in $1\frac{1}{2}$ yards?

57. A thief has 15 miles' start of a constable, but the constable goes 3 miles to the thief's 2. How far must the constable go, before he overtakes the thief?

58. A draper sells cloth from four pieces. From the first he sells $\frac{1}{2}$ of the whole quantity, from the second $\frac{1}{4}$, from the third $\frac{1}{8}$ of the whole, and from the fourth 5 yards. How much does he sell in the whole, and how much from each piece?

59. A fathom is 6 feet. How many inches in $1\frac{1}{2}$ fathoms?

60. The value of a franc, as estimated at the Custom House, is $18\frac{3}{5}$ cents. What is the value of $\frac{1}{4}$ franc?

61. What would be the weight of a globe of hydrogen, 1 foot in diameter, estimating the weight of a similar globe of air at $\frac{1}{25}$ of a pound, and the weight of the hydrogen at $\frac{1}{4}$ as much?

62. How many gills of water would weigh 3 pounds and 14 ounces, if a pint of water weighs a pound?

63. What part of a year is 6 months 15 days? 4 months 10 days? 3 months 18 days? 5 months 24 days?

64. Fifteen degrees of difference in longitude are equivalent to an hour's difference of time. What is the difference of longitude between two places, if their difference of time is 2 hours and 15 minutes?

65. The difference of longitude between two places is $33\frac{1}{2}$ degrees. What is their difference of time?

66. If 4 boys breathe 20 times each per minute, requiring for each breath 30 cubic inches of air, what amount of air will they consume in an hour?

67. A mile is 5280 feet. How many feet distant is a thunder cloud, if 10 seconds elapse between the flash and the report, estimating the velocity of sound at $\frac{1}{5}$ of a mile per second?

68. The dust of the puff-ball consists of seeds, which are sometimes so small that 900 million would occupy only a cubic inch. How many such seeds would there be in $8\frac{1}{2}$ cubic inches?

69. The animalcules of iron ochre are often so small that 144 million would occupy only a cubic inch. How many such animalcules would there be in $\frac{2}{3}$ of a cubic inch?

70. A merchant left by will a certain number of horses, to be divided among his three sons as follows: The eldest was to receive $\frac{1}{2}$ of the whole number and $\frac{1}{2}$ of a horse; the second $\frac{1}{3}$ of the whole and $\frac{1}{3}$ of a horse; the youngest $\frac{1}{4}$ of the whole and $\frac{1}{4}$ of a horse. How many were there in all, and how many did each receive?

71. A shepherd sold to one man $\frac{1}{2}$ his flock and $\frac{1}{2}$ a sheep; to a second, $\frac{1}{2}$ the remainder and $\frac{1}{2}$ a sheep; and to a third, $\frac{1}{2}$ the remainder and $\frac{1}{2}$ a sheep, when he had but 6 left. How many had he at first?

II. EXERCISES FOR THE SLATE.

1. INTEGRAL NUMERATION.

[Ex. 1—50.] 75; 60; 100; 809; 37; 180; 555; 23; 632; 475; 54; 17; 950; 68; 800; 808; 880; 888; 329; 901; 472; 300; 210; 112; 59; 590; 905; 954; 230; 478; 90; 890; 162; 216; 261; 261; 612; 126; 404; 440; 89; 809; 47; 407; 74; 704; 740; 903; 93; 930.

[Ex. 51—100.] 41; 401; 410; 104; 14; 140; 73; 730; 703; 98; 908; 980; 472; 961; 619; 33; 803; 330; 55; 505; 550; 77; 770; 707; 595; 838; 272; 109; 508; 207; 900; 515; 501; 51; 150; 750; 827; 264; 642; 640; 46; 406; 460; 90; 909; 99; 75; 705; 507; 570.

[Ex. 101—150.] 19; 209; 390; 408; 58; 680; 76; 806; 960; 609; 690; 69; 96; 334; 433; 343; 818; 50; 850; 508; 581; 500; 387; 783; 738; 378; 837; 873; 87; 73; 37; 83; 803; 307; 703; 807; 870; 730; 370; 830; 607; 67; 912; 821; 766; 676; 570; 42; 409; 250.

[Ex. 151—200.] 1000; 7000; 6100; 8700; 2800;
(127)

8400; 4820; 2930; 1640; 8350; 270; 9980; 5790;
 5879; 2607; 1923; 9040; 2757; 62; 162; 1062;
 28; 728; 7028; 404; 4004; 8009; 7001; 6030;
 2005; 6565; 4793; 9075; 7958; 8909; 8099; 3020;
 5600; 26; 206; 2006; 2060; 2600; 2607; 2670;
 7026; 7206; 109; 1009; 7109.

[Ex. 201—250.] 1090; 9010; 9009; 87; 807;
 8007; 8070; 8700; 8787; 8707; 1642; 4621; 828;
 2088; 8082; 8280; 8028; 3953; 865; 702; 290;
 6000; 1008; 8017; 2013; 5500; 9049; 2790; 9072;
 6007; 3196; 8840; 5318; 297; 442; 1618; 24;
 204; 9204; 2004; 5879; 6210; 4706; 94; 903;
 9003; 9030; 8903; 2675; 8042.

[Ex. 251—300.] 90; 890; 7890; 67890; 567890;
 235640; 102304; 468519; 108; 2108; 27108; 672108;
 4672108; 14000000; 7000008; 500090; 30000107;
 9500000; 400700; 293007; 5050080; 3200002;
 800000008; 4050402; 62390504; 1618253; 9005009;
 87000050; 203000203; 5830830; 90002; 120036000;
 4000003000; 2000080001; 7001000090; 45300000075;
 28579000606; 151927438; 505000505; 287009307;
 641080205; 10000683; 5400000907; 4107003006;
 200005; 1000101; 8073073; 150900067; 200900604;
 150092.

2. DECIMAL NUMERATION.

[Ex. 1—50.] .8; .4; .6; .9; .3; .7; .5; .2; .01; .1;
 .08; .04; .06; .09; .03; .07; .05; .02; .001; .008;
 .004; .006; .009; .003; .007; .005; .002; .16;
 .25; .34; .67; .011; .068; .033; .142; .203; .307;

.518; .972; .55; .78; .091; .725; .82; .513; .404;
.12; .284; .408; .999.

[Ex. 51—100.] .7; .9; .09; .07; .35; .84; .3; .19;
.5; .05; 1.2; 12.6; 4.04; 8.25; 10.4; 9.71; 80.75;
400.6; 8.8; 90.09; 13.9; .26; .62; 6.2; 409.8;
80.51; .16; .45; .08; 80.37; 30.03; 28.5; 2.85;
28.05; 570.4; 57.04; 286.93; 170.02; 2836.5;
283.65; 1000.19; 7820.33; 5009.11; 8070.65;
4300.04; 3040.5; 2692.95; 33.44; 107.07; 400.04.

[Ex. 101—150.] .098; .003; 11.007; .062;
5.039; 15.02; 7.085; .933; .645; .462; .101; 9.304;
16.061; 840.048; 2.725; 13.875; 409.04; 2007.007;
.407; 400.007; .632; 600.032; .293; 200.093; .986;
900.086; .375; 300.075; .919; 900.019; .334;
300.034; 6.087; 4.708; .283; 19.554; 208.73;
20.873; 2087.3; 6050.096; .184; 100.084; .279;
200.079; .372; 300.072; 30007.2; 3007.283;
4090.05; 620.004.

[Ex. 151—200.] 1.803; 200.087; .2054; .0062;
.0009; .00009; .01064; 75.8427; 9.069; .05001;
408070.5; 40807.05; 4080.705; 408.0705; 40.80705;
4.080705; .4080705; .006004; .06004; .60004;
300005.09; 3.0000509; 300.00509; 6284.06284;
1900.19; 27000.027; 6000.006; 800.42; .80042;
5004006.001004; 387.9000763; .08519; 1843.843;
2030009.1; 203.00091; 2.0300091; 6403.27;
2.001605; 87.0062; .1937; 5.055; .0001; .0909;
4006.4006; 4.0064006; 40064.006; 37.8027;
30.0072; .6008; 19587.0019587.

[Ex. 201—250.] 7.65; .0765; .765; .00765;

19.238; .19238; .0019238; 4.0062; 400.62; .40062;
 7000.007; 7.000007; 5919.8075; 265.2007; 1.840;
 138.4062; 1384.062; 5050058.8; .02345; .2345;
 .008706; 40.08706; 4008.706; 40087.06; 2060.009;
 .20609; 8050004.04; 6.2700043; 627.00043;
 62700.043; .62700043; 4.29848; .0429848; .00429848;
 1862.795; 18.62795; .01862795; .004004; 4000.000004;
 .2002; 2000.0002; .509; 500.009; .00855; 800.00055;
 5903.60087; 230000900060.08; 1600000047.005;
 4030008000.003; 17000090.1804.

3. INTEGRAL NOTATION.

[Ex. 1—25.] Seventeen; eleven; twenty; forty;
 seventy-five; nineteen; thirty-eight; sixty-three; eighty-
 one; ninety; thirteen; fifty-six; seven hundred; four
 hundred and two; nine hundred and fifteen; two hun-
 dred and nine; thirteen hundred; four hundred and
 five; one hundred and eighty-four; twenty-seven;
 twelve; nine hundred and nine; nine hundred and
 ninety-nine; eight hundred and thirty-two; three
 hundred and twenty.

[Ex. 26—50.] One hundred and forty-four; twelve
 hundred and ninety-six; ten hundred; one thousand;
 forty-nine hundred and four; thirty-two hundred and
 sixteen; six hundred and eighty; eight hundred and
 seven; four hundred and five; fourteen; seventy;
 ninety-one; forty-two; four hundred; three hundred
 and three; seven hundred and one; two hundred and
 ten; five hundred and nineteen; eleven hundred and
fifty; nine hundred and thirty; eight hundred and
ninety-six; four hundred and five; five hundred and

forty; five hundred and four; thirteen hundred and thirteen.

[Ex. 51—75.] Five thousand; six thousand and one hundred; nine thousand and nine; four thousand and thirty; one thousand and twenty-seven; seven thousand and five hundred; two thousand; eight thousand and one; three thousand and three hundred; nine hundred and six; ten thousand and five hundred; four thousand four hundred and fifty; seven thousand six hundred and three; three thousand seven hundred and ninety-one; one thousand and five; five thousand and seventy; nine thousand and eight hundred; six thousand and thirty-four; two thousand eight hundred and two; eight thousand four hundred and forty; thirteen thousand seven hundred and nineteen; one thousand and fifty-one; four thousand and five hundred; seven thousand and eight; five thousand nine hundred and five.

[Ex. 76—100.] Two thousand four hundred and ten; eight thousand and thirty; six thousand three hundred and three; nine thousand five hundred and ninety-four; three thousand two hundred and one; seventeen thousand and four; four hundred thousand and five; two hundred and seven thousand and seven hundred; six hundred and eighty-three thousand two hundred and two; fifty thousand and fifty; nine hundred thousand and nine hundred; thirty-nine thousand and thirty-nine; two hundred and ninety-five thousand two hundred and ninety-five; forty-seven thousand and three; eight thousand and one; eight hundred and three thousand and twenty; seven hundred and fifty-

nine thousand and four; two hundred thousand and two; three hundred thousand and twenty; six hundred thousand and four hundred; five hundred and three; one thousand and fifteen; thirty-seven thousand and four; two hundred and ninety thousand and ninety; eight hundred and seven thousand and forty-nine.

[Ex. 101—125.] Seven hundred and sixty-three thousand; five hundred thousand; one million; twenty-seven million; three hundred and forty-five million; eight hundred and two thousand; eight hundred and two million; five million and six hundred thousand; three million and three; nine million and three hundred; four million seven hundred and thirty; twenty million and three thousand; sixteen million and ninety thousand; forty million six thousand and eighty; two hundred million eighty thousand and two; six hundred and forty-four million five hundred and one thousand and five; eight hundred million and four hundred and seventy-two thousand; four hundred thousand and four; four hundred million and four; five hundred and sixty-nine million and eighty; eight hundred and two million and two hundred; five million nine hundred and nine; five million nine thousand and nine; twenty-seven million eighty-four thousand and sixteen; two hundred and seven million twenty thousand five hundred and six.

[Ex. 126—150.] Three hundred and ninety million; twelve million four hundred and twenty-two thousand and four; six million three thousand and forty; two *million thirty thousand and five*; one hundred and

ninety million one thousand and five hundred; seven hundred and sixty-eight million seven hundred and sixty-eight; four hundred million and five; five million and four hundred; five million and four hundred thousand; forty million and sixty-two; one billion; twenty-seven billion; four hundred billion; two hundred and ninety-seven billion and two hundred and ninety-seven million; two hundred and ninety-seven billion and two hundred and ninety-seven thousand; six billion six million and six; forty billion and forty thousand; two hundred billion and two hundred; seven hundred billion and seven; one billion and sixty million; forty-nine billion six hundred thousand and thirty-four; two hundred and eight billion and two hundred and eight; five hundred and seventy billion three hundred million eighty thousand and nine; four billion four hundred and thirty-three thousand and seventy-two; nine billion eighty-four million and four.

4. DECIMAL NOTATION.

[Ex. 1—25.] Seven tenths; four tenths; four hundredths; seven hundredths; three tenths; three hundredths; six tenths; six hundredths; nine tenths; nine hundredths; five tenths; five hundredths; eight tenths; eight hundredths; one tenth; one hundredth; forty-six hundredths; seventy-five hundredths; eleven hundredths; thirty-four hundredths; ninety-nine hundredths; one, and two hundredths; twenty-seven, and nine hundredths; sixty-three, and thirteen hundredths; twenty-eight, and five tenths.

[Ex. 26—50.] Two hundred and ninety, and three
12

tenths; sixty-five, and eleven hundredths; four hundred and two, and eighty-four hundredths; twenty-eight hundredths; seven thousandths; forty-four thousandths; two hundred and eighty-seven thousandths; one hundred and five thousandths; four, and four tenths; nineteen, and thirteen thousandths; four hundred and eighty, and seven tenths; two hundred and thirty, and nine hundredths; one hundred and fifty, and six thousandths; fifty-one thousandths; four, and eighty-seven thousandths; eleven, and three hundredths; two hundred and five, and nineteen hundredths; eight hundred and sixty-four, and nineteen thousandths; five, and sixty-one thousandths; ninety-five tenths; ninety-five hundredths; ninety-five thousandths; six, and eight thousandths; forty-seven, and eleven thousandths; two, and nine hundred and four thousandths.

[Ex. 51—75.] Eight hundred and sixty-five thousandths; eight hundred and sixty-five hundredths; eight hundred and sixty-five tenths; eight hundred and sixty-five ten-thousandths; ninety-seven, and four thousandths; two hundred and one, and seventy-eight thousandths; six, and eight hundred and fifty-one thousandths; nine thousand, and nine thousandths; seven thousand and six, and nine hundredths; sixty-three, and seventeen hundredths; forty, and one hundred and twenty-nine thousandths; four, and sixty-eight ten-thousandths; seven, and five ten-thousandths; twenty-one, and three hundredths; eighty, and three tenths; seventy-five, and three hundred-thousandths; *forty-nine ten-thousandths; fifty-six millionths; sixty-*

two thousandths; eighty-five hundred-thousandths; one, and eight millionths; ninety, and seventy-five millionths; two hundred and three, and one hundred and four millionths; six, and seven thousand and one millionths; six thousand and ninety-five ten-thousandths.

[Ex. 76—100.] Six thousand and ninety-five hundredths; six thousand and ninety-five tenths; six thousand and ninety-five thousandths; six thousand and ninety-five millionths; four hundred and eight, and six thousand and eighty-three hundred-thousandths; ninety-one, and fifty-seven millionths; forty thousand, and ninety-five millionths; eighty-seven millionths; eighty-seven ten-thousandths; five millionths; forty-nine thousand two hundred and sixty-eight millionths; seventy-four ten-millionths; eight hundred, and eight hundredths; seventy-two, and ninety thousand and eighty-seven ten-millionths; thirty-five, and sixty-nine thousand and five millionths; eight, and six hundred and thirty-two ten-millionths; five hundred and ninety-five hundred-millionths; thirty-three, and thirty-three hundred-thousandths; four, and nine millionths; seven, and eleven ten-millionths; three hundred-millionths; fifty-nine thousand and nine ten-millionths; ninety-seven, and five hundred and thirty-six millionths; one hundred and thirty-five, and one hundred and thirty-five hundred-millionths; four, and sixty-two millionths.

[Ex. 101—125.] Three millionths; three thousandths; three hundred-thousandths; three hundredths; three ten-millionths; three ten-thousandths; four hun-

dred and eight hundred-millionths; seven thousand nine hundred and sixty-three hundred-millionths; forty-eight thousand and two hundred-millionths; fifty-nine hundred-millionths; eight billionths; one hundred and four billionths; twenty thousand one hundred and four billionths; eight thousand seven hundred and two billionths; fifty-five thousandths; sixty-nine, and eighty-four thousandths; two thousand and seven, and five hundredths; four, and six millionths; nineteen, and nineteen ten-thousandths; twenty-eight, and three hundred and two hundred-thousandths; five million five hundred and eighty-seven thousand six hundred and two billionths; twenty-nine hundred-millionths; eight thousand, and seventy-eight ten-millionths; thirteen, and four thousandths; five, and seven billionths.

[Ex. 126—150.] Six hundred and ninety, and sixty-nine thousandths; four thousand, and four thousandths; nine million, and nine millionths; six thousand eight hundred and sixty-seven, and sixty-three ten-thousandths; four million five hundred and ninety-nine thousand and eighty-eight ten-millionths; six million six hundred and eighty-two thousand and eighty-nine millionths; six million six hundred and eighty-two thousand and eighty-nine tenths; fifty-three, and fifty-three billionths; two billion eight hundred million four thousand five hundred and ninety-six billionths; seven hundred and seven billionths; seven hundred and seven millionths; seven hundred and seven hundredths; seven hundred and seven tenths; four, and eighty-three ten-thousandths; four hundred and eighty-three ten-thou-

sandths; four hundred, and eighty-three ten-thousandths; six hundred and fifty-nine hundred-millionths; six hundred, and fifty-nine hundred-millionths; four hundred and twenty-seven billionths; four hundred, and twenty-seven billionths; three million eight hundred and four thousand five hundred and forty-two hundred-millionths; six thousand six hundred and ninety-six millionths; eight hundred and twenty-five ten-millionths; thirty-seven hundred-millionths; twenty thousand and nine, and two hundred thousand and ninety-two billionths.

5. INTEGRAL ADDITION.

- | | |
|----------------------|------------------------|
| 1. Add 11 and 11. | 19. Add 222 and 444. |
| 2. Add 111 and 111. | 20. Add 222 and 555. |
| 3. Add 11 and 22. | 21. Add 222 and 666. |
| 4. Add 111 and 222. | 22. Add 222 and 777. |
| 5. Add 11 and 33. | 23. Add 333 and 333. |
| 6. Add 111 and 333. | 24. Add 333 and 444. |
| 7. Add 11 and 44. | 25. Add 333 and 555. |
| 8. Add 111 and 444. | 26. Add 333 and 666. |
| 9. Add 11 and 55. | 27. Add 444 and 444. |
| 10. Add 111 and 555. | 28. Add 444 and 555. |
| 11. Add 11 and 66. | 29. Add 4444 and 3333. |
| 12. Add 111 and 666. | 30. Add 4444 and 2222. |
| 13. Add 11 and 77. | 31. Add 4444 and 1111. |
| 14. Add 111 and 777. | 32. Add 5555 and 4444. |
| 15. Add 11 and 88. | 33. Add 3333 and 2222. |
| 16. Add 111 and 888. | 34. Add 3333 and 1111. |
| 17. Add 222 and 222. | 35. Add 2222 and 2222. |
| 18. Add 222 and 333. | 36. Add 1111 and 1111. |

87. Add 2222 and 1111. 44. Add 1954 and 7024.
38. Add 3333 and 1111. 45. Add 2608 and 7051.
39. Add 187 and 212. 46. Add 3729 and 1240.
40. Add 466 and 503. 47. Add 1561 and 7438.
41. Add 720 and 179. 48. Add 9087 and 912.
42. Add 484 and 305. 49. Add 2624 and 363.
43. Add 226 and 762. 50. Add 1919 and 2080.

[Ex. 51—75.] Add 31, 22, and 13; 43, 24, and 32; 12, 61, and 26; 14, 34, and 31; 24, 33, and 42; 16, 70, and 12; 28, 41, and 20; 22, 44, and 22; 12, 13, and 14; 86, 2, and 11; 23, 32, and 14; 61, 2, and 16; 35, 11, and 53; 28, 41, and 10; 94, 3, and 2; 80, 11, and 8; 46, 50, and 2; 32, 23, and 4; 16, 12, and 61; 91, 5, and 2; 6, 32, and 51; 10, 25, and 44; 25, 52, and 12; 14, 24, and 41; 37, 31, and 21.

[Ex. 76—100.] Add 18, 40, and 41; 33, 44, and 22; 15, 51, and 31; 2634 and 263; 3082 and 6515; 1190 and 807; 6202 and 3775; 1524 and 5451; 1682 and 8105; 5180 and 4210; 366 and 2231; 8707 and 1192; 2244 and 5533; 8765 and 1122; 9080 and 617; 1234 and 8765; 2626 and 7162; 3041 and 5048; 2753 and 7136; 1620 and 379; 4482 and 1314; 2808 and 6091; 4321 and 5432; 4235 and 4123; 1616 and 8273.

[Ex. 101—125.] Add 67 and 95; 39 and 21; 80 and 199; 26 and 54; 41 and 99; 28 and 82; 73 and 47; 88 and 88; 16 and 55; 62 and 29; 45 and 83; 72 and 77; 48 and 88; 62 and 99; 45 and 67; 33 and 89; 51 and 79; 55 and 65; 28 and 74; 68 and

98; 38 and 22; 95 and 59; 67 and 76; 66 and 77; 38 and 83.

[Ex. 126—150.] Add 33 and 88; 29 and 92; 22 and 99; 91 and 19; 11 and 99; 57 and 75; 55 and 77; 38 and 91; 276 and 50; 40 and 593; 187 and 60; 82 and 79; 31 and 89; 54 and 38; 20 and 490; 41 and 789; 44 and 827; 66 and 78; 94 and 59; 85 and 85; 37 and 270; 94 and 49; 99 and 44; 65 and 56; 66 and 55.

[Ex. 151—175.] Add 184 and 207; 256 and 634; 827 and 907; 765 and 879; 208 and 793; 114 and 987; 259 and 879; 890 and 319; 433 and 678; 288 and 950; 167 and 858; 330 and 990; 421 and 789; 436 and 587; 3104 and 996; 728 and 162; 597 and 737; 281 and 165; 144 and 820; 1620 and 183; 455 and 792; 166 and 910; 2804 and 971; 385 and 715; 427 and 631.

[Ex. 176—200.] Add 472 and 659; 790 and 793; 841 and 270; 625 and 364; 287 and 709; 555 and 484; 218 and 878; 492 and 475; 914 and 987; 462 and 565; 681 and 723; 944 and 65; 277 and 1740; 537 and 850; 184 and 708; 237 and 732; 499 and 576; 1085 and 1530; 2644 and 1957; 9127 and 6872; 4953 and 7872; 6090 and 1858; 4456 and 8246; 9160 and 7890; 4725 and 4933.

[Ex. 201—225.] Add 27, 62, and 85; 49, 109, and 16; 31, 41, and 51; 804, 47, and 21; 16, 95, and 30; 14, 23, and 11; 37, 84, and 48; 25, 52, and 77; 606, 33, and 30; 22, 99, and 80; 31, 13, and 72; 9, 68, and 88; 12, 7, and 53; 44, 54, and 8; 9, 8, and

23; 52, 6, and 15; 64, 4, and 5; 7, 90, and 6; 80, 142, and 5; 283, 64, and 91; 847, 28, and 109; 62, 490, and 77; 383, 45, and 67; 80, 209, and 56; 44, 32, and 692.

[Ex. 226—250.] Add 701, 455, and 238; 927, 854, and 81; 268, 862, and 8; 430, 304, and 99; 76, 27, and 903; 294, 5, and 88; 157, 715, and 571; 222, 406, and 789; 50, 847, and 569; 338, 595, and 834; 239, 487, and 953; 726, 258, and 940; 901, 681, and 145; 480, 742, and 116; 593, 412, and 131; 986, 881, and 275; 434, 548, and 982; 352, 651, and 644; 57, 960, and 301; 425, 832, and 69; 471, 328, and 901; 269, 407, and 738; 534, 786, and 200; 965, 344, and 296; 997, 627, and 875. •

[Ex. 251—275.] Add 33, 17, 44, and 60; 28, 56, 84, and 90; 37, 74, 47, and 94; 18, 35, 71, and 17; 22, 43, 34, and 19; 21, 35, 70, and 62; 18, 81, 54, and 77; 29, 82, 58, and 85; 16, 61, 20, and 99; 16, 46, 76, and 26; 8, 29, 7, and 15; 2, 94, 7, and 49; 21, 57, 58, and 18; 32, 23, 55, and 117; 42, 78, 28, and 82; 24, 12, 36, and 60; 15, 41, 31, and 92; 93, 13, 39, and 52; 25, 75, 8, and 44; 32, 87, 95, and 20; 14, 31, 70, and 68; 86, 43, 29, and 92; 4, 81, 72, and 9; 66, 33, 11, and 77; 28, 80, 19, and 15.

[Ex. 276—300.] Add 32, 17, 40, and 53; 98, 23, 52, and 65; 16, 44, 57, and 96; 42, 58, 32, and 6; 94, 71, 32, and 89; 12, 69, 40, and 77; 38, 53, 47, and 86; 20, 96, 5, and 34; 42, 96, 99, and 7; 62, 78, 75, and 27; 6, 28, 54, and 910; 91, 63, 14, and 151; 80, 44, 72, and 11; 69, 53, 142, and 311; 378, 44,

825, and 527; 760, 63, 330, and 229; 98, 311, 872, and 968; 881, 275, 344, and 8; 549, 82, 352, and 6; 156, 44, 579, and 63; 14, 252, 836, and 49; 184, 728, 196, and 249; 773, 83, 4, and 56; 780, 295, 64, and 423; 1954, 7262, 5849, 882, and 64.

6. DECIMAL ADDITION.

- | | |
|-------------------------|----------------------------|
| 1. Add .4, .7, and .9. | 24. Add .4, .6, and .8. |
| 2. Add .3, .6, and .8. | 25. Add .2, .9, and .7. |
| 3. Add .5, .5, and .2. | 26. Add 1.7, 2.3, and .4. |
| 4. Add .1, .9, and .4. | 27. Add .5, 8.6, and .4. |
| 5. Add .6, .2, and .8. | 28. Add 1.8, 2.2, and .9. |
| 6. Add .4, .4, and .3. | 29. Add 7.5, 7.3, and 4.2. |
| 7. Add .2, .4, and .6. | 30. Add 6.8, .6, and .7. |
| 8. Add .1, .8, and .1. | 31. Add 3.6, 4.5, and 9.9. |
| 9. Add .3, .6, and .9. | 32. Add 8.8, 6.6, and 8.2. |
| 10. Add .4, .7, and .8. | 33. Add .8, .9, and .6. |
| 11. Add .2, .5, and .8. | 34. Add 8.6, 2.8, and 8.9. |
| 12. Add .1, .9, and .7. | 35. Add 5.3, .5, and 3.2. |
| 13. Add .6, .2, and .5. | 36. Add .8, 4.5, and 9.6. |
| 14. Add .7, .3, and .6. | 37. Add 7, 7.7, and 4.8. |
| 15. Add .2, .1, and .7. | 38. Add 8.4, 8.3, and 4. |
| 16. Add .5, .5, and .5. | 39. Add 6.5, 9.6, and 5.9. |
| 17. Add .4, .8, and .4. | 40. Add 4.2, 7.4, and 2.7. |
| 18. Add .2, .7, and .5. | 41. Add 3.8, 4.5, and .4. |
| 19. Add .3, .6, and .6. | 42. Add 2.6, 6.9, and 6.8. |
| 20. Add .4, .2, and .1. | 43. Add 2.5, 3.7, and 2. |
| 21. Add .5, .3, and .2. | 44. Add 9.2, 9, and 2.8. |
| 22. Add .9, .7, and .9. | 45. Add 6.5, 8.6, and 5.8. |
| 23. Add .3, .1, and .5. | 46. Add 9.7, 4.2, and 1.7. |

47. Add 8.6, 5, and 1.9. 49. Add 1.7, 4.1, and 2.9.
48. Add 9.7, 6.9, and 3.6. 50. Add 6.4, 8.7, and 8.5.

[Ex. 51—75.] Add .7, .18, and .25; .04, .69, and .11; .23, .4, and .72; 1.5, 2.05, and .97; .62, 6.2, and .59; 37, .44, and .68; 4.8, 4.3, and .05; .22, 6.7, and .62; 50, 3.4, and 8.4; .97, 1.02, and 7.3; .56, .64, and .21; 2.7, .81, and .11; .24, 5.4, and .08; .37, .24, and 7.2; 4.9, .56, and 9.5; .63, 8.04, and .38; .43, .84, and 70; .77, .76, and .95; 4.3, 8.2, and .53; .59, 8.02, and .86; 6.9, .28, and .66; .88, .09, and 9.5; 4.3, 6.7, and .86; 9.09, .4, and .49; .96, .75, and .43.

[Ex. 76—100.] Add .18, .07, and 8.92; 2.06, 7.8, and 5.5; 2.03, .82, and .91; 9.5, 2.8, and 3.6; .97, 8.04, and .3; .33, 3.3, and 3.2; .64, .53, and .15; .31, .63, and 5.7; .99, 9.5, and .31; 1.79, 4.3, and 3.33; .59, .52, and .36; .8, .59, and .65; 3.7, .89, and 2.7; .74, .47, and .33; .69, .96, and .55; .81, .18, and .46; .13, .14, and 9.9; .12, 2.7, and .96; .31, .32, and 8.5; .29, .03, and .65; 1.04, 2.8, and 4.2; .87, 4.4, and .28; .71, 9.05, and .44; .56, .19, and .59; 6.8, 4.7, and 2.09.

[Ex. 101—125.] Add .085 and 9.72; 4.063 and .087; 51.9 and 88.75; 4.23 and 7.691; .187 and 57.92; 428 and 64.7; 1.606 and .394; 22.8 and 7.505; .446 and .0955; 27.52 and 6.481; .1954 and 36.78; .8723 and 34.345; 428 and 63.099; .0277 and .396; 2.1641 and 37.0459; .9769 and .3617; 8.242 and .8744; 28.71 and 9.054; 833.72 and 9.0684; 3.795 and 80.412; .9645 and 8.13574; .0097 and 6.9903;

81.81 and 8.181; .2468 and 7.5309; 8.118 and 46.1814.

[Ex. 126—150.] Add .85965 and .3789; 1.0428 and 42.874; .42871 and 905.445; .6195 and 9.6847; 20.923 and 4.5864; .0718 and .00825; .0469 and .1132; 494.72 and 1.5205; .97 and 97; 6.26259 and 37.4468; 48.4305 and .22676; 250.34 and 8.4971; 27.356 and 9.5639; .0787 and 1.972; 59.802 and 8.669; .2827 and 81.119; 2989.2 and 64.953; .8743 and .377; 8.208 and 76.7184; .02781 and 5.092; 2.6086 and .0914; 7142 and 637.58; 967.54 and 31.359; 6.9286 and 93.072; 563.092 and 58.2313.

[Ex. 151—175.] Add .59 and .059; 2.76 and .276; 54.3 and 5.43; 750 and 49.87; 61.75 and 4.0638; 2.951 and 74.1; 6.837 and .8375; 419.2 and 81.74; .28435 and 59.197; 4684 and 783.9; 2.0095 and 1.9905; 16.832 and 72.058; .4957 and .884; 26.83 and 952.074; 212.8 and 83.94; .0999 and 9.9001; 6.162 and .5154; 784.4 and 2.871; 3.687 and .0796; 2.2823 and 1.758; 4.401 and .9537; .02678 and .0954; 1820, and 185.1; 27.59 and 2.759; 3.1482 and .097.

[Ex. 176—200.] Add .7766 and 1.554; 24.84 and 5.963; 51.07 and 936.93; 5.279 and .0874; 2.1653 and 21.653; 1430 and 2680.9; 556.7 and 23.83; 4.795 and .0795; 651.2 and 79.8; 33.64 and 19.56; 90.862 and .0431; .8596 and .53798; .044 and 6.956; 28.066 and .93139; .951 and 7.009; 5930 and 269.8; 497.24 and 6.164; .46409 and .0559; 324.5 and 7.876; 941.31 and 64.81; 24.74 and 2.738; 87.53

and 6.084; 253.75 and 18.272; 44.091 and 2.291; 8.7633 and 97.257.

7. INTEGRAL SUBTRACTION.

[Ex. 1—25.] Subtract 11 from 11; 111 from 111; 11 from 22; 111 from 222; 11 from 33; 111 from 333; 11 from 44; 111 from 444; 11 from 55; 111 from 555; 11 from 66; 111 from 666; 11 from 77; 111 from 777; 11 from 88; 111 from 888; 11 from 999; 222 from 333; 222 from 444; 222 from 555; 222 from 666; 222 from 777; 222 from 888; 222 from 999; 333 from 433.

[Ex. 26—50.] Subtract 333 from 444; 533 from 555; 663 from 666; 333 from 777; 543 from 888; 333 from 999; 444 from 444; 444 from 555; 444 from 666; 444 from 777; 444 from 888; 444 from 999; 123 from 987; 216 from 529; 757 from 858; 427 from 597; 763 from 863; 219 from 999; 144 from 874; 268 from 379; 507 from 829; 404 from 909; 161 from 862; 333 from 546; 123 from 456.

[Ex. 51—75.] Subtract 28 from 90; 63 from 81; 77 from 82; 5 from 24; 3 from 51; 19 from 44; 37 from 45; 26 from 55; 87 from 102; 59 from 74; 26 from 62; 38 from 83; 13 from 100; 27 from 70; 43 from 90; 67 from 75; 81 from 100; 34 from 101; 17 from 71; 49 from 94; 32 from 61; 88 from 127; 19 from 40; 55 from 94; 39 from 63.

[Ex. 76—100.] Subtract 18 from 77; 35 from 84; 26 from 90; 58 from 87; 24 from 73; 48 from 61; 49 from 131; 68 from 85; 77 from 243; 59 from 95;

46 from 54; 16 from 74; 39 from 95; 66 from 98;
28 from 56; 69 from 98; 79 from 142; 38 from 64;
49 from 85; 37 from 62; 26 from 78; 48 from 96;
37 from 74; 39 from 78; 18 from 51.

[Ex. 101—125.] Find the difference between 297 and 423; 690 and 275; 104 and 86; 37 and 370; 59 and 837; 284 and 482; 175 and 751; 157 and 571; 24 and 400; 62 and 830; 929 and 48; 480 and 32; 763 and 367; 673 and 376; 44 and 232; 195 and 97; 244 and 622; 188 and 99; 272 and 722; 453 and 87; 148 and 59; 60 and 28; 219 and 873; 356 and 427; 845 and 934.

[Ex. 126—150.] Find the difference between 271 and 154; 483 and 279; 657 and 387; 779 and 561; 242 and 583; 77 and 897; 22 and 932; 844 and 69; 275 and 83; 50 and 497; 220 and 640; 828 and 971; 642 and 372; 519 and 637; 272 and 291; 440 and 168; 337 and 279; 419 and 618; 207 and 163; 555 and 472; 888 and 779; 621 and 126; 304 and 570; 215 and 96; 87 and 870.

[Ex. 151—200.] From 29648 subtract 1820; 2798; 1104; 8715; 13918; 9999; 7795; 1819; 276; 4484; 27950; 28590; 7724; 3650; 1975; 9874; 4937; 2468; 12340; 6176; 13352; 6676; 29474; 9716; 4237; 25196; 3727; 22914; 4016; 8837; 27941; 9618; 20716; 3555; 4728; 8877; 9621; 12630; 4570; 21596; 8787; 2974; 23690; 2751; 4863; 5983; 7284; 4821; 7575; 11575.

[Ex. 201—250.] From 71530 subtract 2337; 1230; 1410; 7851; 39118; 8999; 9757; 8191; 762;

8444; 22222; 3333; 4444; 5555; 8888; 66666;
67777; 11111; 19545; 29648; 27950; 28590;
7724; 3650; 1975; 9874; 9437; 6824; 42130;
6176; 13352; 7606; 70893; 69275; 8409; 22932;
8446; 9275; 8350; 49722; 64082; 8971; 64237;
25196; 37272; 29144; 16833; 7279; 41961; 8207.

[Ex. 251—300.] From 629504 subtract 1541;
98273; 46409; 11757; 429600; 183139; 24680;
118197; 263402; 195871; 462085; 222222; 619728;
45142; 63827; 240860; 197444; 382208; 79988;
88888; 219590; 475863; 251963; 72722; 91440;
168337; 279419; 618207; 163555; 472888; 77962;
112630; 457021; 596878; 72974; 236902; 75148;
63598; 372844; 82175; 75115; 71530; 598372;
84482; 175751; 157571; 244006; 283092; 94848;
302763.

8. DECIMAL SUBTRACTION.

[Ex. 1—25.] Take .3 from 1.2; .4 from 5.9; 2.7 from 6.8; 3.9 from 16.4; 2.5 from 12.2; 4.4 from 9.3; 1.9 from 5.8; 2.8 from 5.6; 3.3 from 4.3; 4.7 from 6.2; .08 from 1.01; .19 from 4.87; .35 from 6.22; 4.1 from 5.08; 2.7 from 3.01; 3.6 from 4.5; 6.95 from 18.03; 2.87 from 9.11; 4.32 from 5.18; 1.69 from 3.33; 21.4 from 87.24; 4.38 from 9.72; 6.15 from 8.08; 1.41 from 2.09; 63 from 80.5.

[Ex. 26—50.] Take 41 from 50.76; 88.8 from 104.9; 26.4 from 64.2; 27.9 from 118.75; 4.16 from 31.95; .37 from 4.92; .06 from 1.81; 2.29 from 8.27; 5.16 from 15.05; .24 from .32; 5.76 from 5.83;

2.74 from 4.72; 8.38 from 10.01; 4.59 from 9.45; .319 from .328; .114 from 2.07; 65.3 from 82.1; 44.9 from 50.6; .388 from 1.049; 6.23 from 8.32; 47.9 from 88.3; 26.1 from 50.09; .365 from .807; 21.4 from 50.27; .169 from 8.077.

[Ex. 51—75.] Subtract .49 from 8.5; .027 from .03; 5.16 from 8.2; 1.95 from 10; .234 from .5; 1.68 from 2.04; .593 from 2.87; 41.4 from 80; 2.73 from 12.6; 31 from 120.7; 4.28 from 33.7; 1.54 from 8.27; 13.7 from 95; 63 from 90.9; 8.27 from 16.8; 3.23 from 19.5; .049 from 1; .0087 from 16.2; .284 from 13; 6.2 from 13.08; .975 from 3.74; 2.64 from 11.7; .456 from 7.89; .0216 from 3.014; .679 from 97.6.

[Ex. 76—100.] Subtract .42 from 8.8; 3.65 from 11.25; 13 from 91.7; .494 from .507; .195 from .202; 6.57 from 100; .53 from 8.4; .026 from .11; 6.82 from 23; .275 from 9.27; 42.4 from 57.3; 16.9 from 73.9; .388 from 9; 1.64 from 2.46; 4.942 from 5.96; .038 from 6.9; 1.82 from 5.28; .034 from .56; 2.19 from 67; .003 from 1; .497 from .5; 6.84 from 37.1; .261 from .39; 1.872 from 2.96; .27 from 6.81.

[Ex. 101—125.] Find the difference between .65 and .8; 27 and 6.24; .29 and 1.3; .0475 and 1; 1.68 and .97; 16.8 and 97; .168 and 9.7; 3.2 and 5.04; 26 and 9.74; 1.9 and 2.44; 38 and 8.027; 5 and .004; .2 and .065; .08 and .0795; .83 and 2; 50 and .971; 28.3 and 8.4; 48.2 and 27.5; 832 and

79.6; 41.5 and 38.7; 2.64 and 5.091; 37 and .037; .015 and .8; 3.74 and 7; .283 and .382.

[Ex. 126—150.] Find the difference between 10 and 5.07; 21.6 and 6.12; 4.087 and .99; 6.08 and 7.07; .532 and 1.07; 412 and 399.6; 2.8 and 1.091; 15.35 and 22.07; 3.85 and 13.83; 2.09 and 1.97; .0084 and .063; .247 and 1.95; 4 and .95; .4 and 95; 6 and .008; 2.3 and 1.76; 1.008 and .935; .168 and 9.09; 11 and 7.05; .28 and 28; 5.1 and .51; 2.65 and 56.2; 333 and 29.9; 4.24 and 6.33; 479 and .479.

[Ex. 151—175.] From 8579.36 subtract 69.859; 2784.062; 3138.7; 5.948; 2.2619; 187.8328; 609.508; 3175.6; 8492; 8.492; 84.92; 849.2; 6131.08; 245.87; 999.9; 879.37; 801.59; 8023.81; 7579.37; 8455.91; 2036.15; 87.87; 3098; 4779.39; 8463.94.

[Ex. 176—200.] What is the difference between 4087 and 395.5; 163 and .0163; 87.5 and .00875; .875 and .0875; 3.1416 and 17.9; 183 and 182.97; 64 and 49.01; 28 and 13.007; 84.24 and 162.1; 3.37 and 2.092; .7854 and 4; .21 and 2.1; 159 and 95.1; 1.76 and 200; .8383 and 83.83; 204 and 20.4; 17.59 and 301; 7.482 and 75.09; 2163 and 87.49; 1105 and 907.2; 38.38 and 29.14; .2345 and 6.789; 175 and 15.1; 2.099 and 13.74; 8840 and 679.04.

[Ex. 201—225.] Find the difference between .085 and 9.72; 4.063 and .087; 51.9 and 88.75; 4.23 and 7.691; .187 and 57.92; 428 and 64.7; 1.606 and .394; 22.8 and 7.505; .446 and .9995; 27.52 and 6.481; .1954 and 36.78; 8723 and 34.345; 428 and 63.099; .0277 and .396; 2.1641 and 37.0459; 3769

and .3617; 8.242 and .8744; 28.71 and 9.054; 883.72 and 9.0684; 8.795 and 80.412; .9645 and 8.13574; .0097 and 6.9903; 81.81 and 8.181; .2468 and 7.5809; 8.118 and 46.1314.

[Ex. 226—250.] What is the difference between 8.5965 and 37.89; .0428 and 42.874; .72841 and 905.445; .6195 and 9.6847; 29.923 and 4.5864; .0718 and .00825; .0469 and 11.32; 404.72 and 1.5205; .97 and 97; 6.26259 and 37.468; 48.4305 and .22766; 250.34 and 8.4971; 27.356 and 9.5639; .0787 and 1.972; 59.802 and 8.669; .2827 and 81.119; 2989.2 and 64.953; .8743 and .365; 4.2907 and 75.23; .02478 and 5.075; 1.6058 and .0723; 7174 and 626.59; 967.54 and 31.593; 6.2968 and 39.027; 356.029 and 58.3213.

[Ex. 251—275.] Find the difference between .59 and .059; 2.76 and .276; 54.3 and 5.43; 750 and 49.87; 91.607 and 890; 47.25 and 4.933; .2762 and 8.54; 91.09 and 1.631; 4151 and 80.47; .2116 and 9.53; .0142 and 31.13; 7.844 and 8.25; 527.7 and 6.063; 33.022 and 998.03; 113.72 and 9688.8; 713.34 and 46.028; 56.849 and .0377; 4.4794 and 18.35; 71.17 and 2.243; 3.419 and 21.357; .0621 and 88.154; 77.298 and 2.5885; .1661 and 2.099; 164.67 and 62.6829; 7.15 and .2947.

[Ex. 276—300.] What is the difference between 61.75 and 4.0638; 2.951 and 74.1; 6.837 and .8375; 4.192 and 81.74; .28435 and 59.197; 4684 and 783.9; 2.0095 and 1.9905; 16.832 and 72.058; 4957 and .884; 26.83 and 952.074; 212.8 and 83.94; .0000

and 9.9001; 6.162 and .5154; 784.4 and 2.871; 3.687 and .0796; 2.2823 and 1.758; 4.401 and .9537; .02678 and .0954; 1820 and 185.1; 27.59 and 2.759; 3.1482 and .997; .7766 and 1.554; 24.84 and 5.963; 51.07 and 986.93; .044 and 651.27.

9. INTEGRAL MULTIPLICATION.

[Ex. 1—10.] Multiply 11111 by 1; by 2; by 3; by 4; by 5; by 6; by 7; by 8; by 9; by 10.

[Ex. 11—20.] Multiply 22222 by 1; by 2; by 3; by 4; by 10; 21012 by 1; by 2; by 3; by 4; by 10.

[Ex. 21—30.] Multiply 33333 by 1; by 2; by 3; by 10; 30213 by 1; by 2; by 3; 22033 by 2; by 3; by 10.

[Ex. 31—40.] Multiply 22222 by 5; by 6; by 7; by 8; by 9; 33333 by 4; by 5; by 6; by 7; by 8.

[Ex. 41—50.] Multiply 44444 by 3; by 4; by 5; by 6; by 7; by 8; by 9; 30142 by 7; by 8; by 9.

[Ex. 51—60.] Multiply 55555 by 2; by 3; by 4; by 5; by 6; by 7; by 8; by 9; by 10; by 11.

[Ex. 61—70.] Multiply 654321 by 2; by 3; by 4; by 5; by 6; by 7; by 8; by 9; by 11; by 12.

[Ex. 71—80.] Multiply 70753 by 2; 3; 4; 5; 6; 7; 8; 9; 12; 13.

[Ex. 81—90.] Multiply 80486 by 2; 3; 4; 5; 6; 7; 8; 9; 11; 14.

[Ex. 91—100.] Multiply 99872 by 2; 3; 4; 5; 6; 7; 8; 9; 20; 50.

[Ex. 101—150.] Find the product of 47095 by 13; by 17; 19; 21; 12; 97; 79; 83; 25; 40; 33; 91; 66; 84; 46; 31; 16; 77; 48; 68; 86; 90; 130; 103; 170; 107; 701; 190; 109; 210; 201; 120; 102; 970; 907; 830; 803; 250; 205; 330; 408; 901; 606; 804; 406; 301; 106; 707; 308; 806.

[Ex. 151—200.] Required the product of 28316 by 13; by 17; 19; 21; 12; 97; 79; 83; 25; 40; 33; 91; 66; 84; 46; 31; 16; 77; 48; 68; 86; 90; 130; 103; 170; 107; 701; 190; 109; 210; 201; 120; 102; 970; 907; 830; 803; 250; 205; 330; 303; 901; 606; 804; 406; 301; 106; 707; 408; 806.

[Ex. 201—250.] Multiply 90048 by 27; by 207; 2007; 16; 1006; 1060; 48; 480; 327; 115; 401; 2008; 5780; 333; 216; 531; 547; 289; 466; 3030; 212; 989; 772; 640; 568; 415; 329; 283; 112; 121; 1021; 4004; 96; 196; 80; 900; 3000; 579; 487; 207; 162; 42; 999; 1001; 450; 668; 9307; 811; 209; 500.

[Ex. 251—300.] Multiply 5572 by 30; by 29; 205; 520; 335; 234; 162; 207; 909; 88; 225; 625; 526; 256; 265; 5062; 38; 27; 19; 119; 901; 840; 235; 758; 987; 261; 140; 144; 280; 841; 137; 259; 468; 104; 333; 999; 666; 181; 413; 329; 860; 770; 61; 345; 125; 872; 278; 753; 654; 555.

10. DECIMAL MULTIPLICATION.

[Ex. 1—10.] Multiply 2.07 by 2; by 4; 7; 5; 3; 8; 6; 9; 10; 100.

[Ex. 11—20.] Multiply 35.7 by 13; by 25; 10; 40; 200; 105; 34; 66; 93; 42

[Ex. 21—30.] Multiply .048 by .1; .5; .9; .4; 4; 60; 800; 2000; 7.8; .95.

[Ex. 31—40.] Multiply 2.175 by 13; 1.3; 27; .27; 45; 450; 9; .09; 3.3; 330.

[Ex. 41—50.] Multiply .0064 by 900; 740; 875; 206; 137; 750; 115; 220; 13; 904.

[Ex. 51—60.] Multiply 29.3 by .07; .009; .043; .187; 2.6; 31; 440; 3.87; 2.19; 65.8.

[Ex. 61—70.] Multiply 5.907 by 16; 33; 490; 507; .26; .084; 7.8; .0059; 55; 9000.

[Ex. 71—80.] Multiply .0976 by 300; 80; 27; .19; .042; 6.05; 3.8; 6.6; .05; 329.

[Ex. 81—90.] Multiply 380.4 by 270; 95; 4.7; .32; 830; .065; .0404; 269; 183; .066.

[Ex. 91—100.] Multiply .592 by .59; 9.2; 52; .87; .064; 3.15; 2.61; .0808; .0049; 679.

[Ex. 101—150.] Multiply 33.06 by .95; 8.04; 17; 55.7; 230; 292.05; 52.03; 352; 34.1; 622; .079; .0988; 225; 6.255; 2.62; .562; 6550; 623; 8.27; 1.911; 99.01; 84; .0235; 7.58; .937; .0026; 114.01; 442; 8.084; 113; .725; .0946; 81.04; 333; 9.99; .666; .027; 9.084; .0059; 31.31; 476; .147; .036; 9.25; 814; 36.3; .285; .00099; 2.008; 20.08.

[Ex. 151—200.] Multiply .0609 by 4000; 400; 40; .04; 6080; 603; 60.3; 6.03; 584; 9009; 9.009; .0015; 262; 480; 7.31; 2.026; .334; .159; .0274; 5.159; .0472; 314; 9.8; 980; 500; .05; 216; 8.95; .372; 46.94; 2.132; .594; .687; 941; 1.089; 108.9; 3.26; 404; 2.015; 3.802; 4030; 6200; 90000; .0795; 608; 99.01; .0026; .0988; 790; 63.01.

11. INTEGRAL DIVISION.

[Ex. 1—10.] Divide each of the following numbers by 2. 222; 444; 666; 888; 10000; 12468; 14624; 16022; 18246; 20408.

[Ex. 11—20.] Divide each of the following numbers by 3. 333; 666; 999; 12000; 1533; 1836; 2169; 2406; 2739; 3063.

[Ex. 21—30.] Divide each of the following numbers by 4. 444; 888; 12000; 1648; 2088; 2404; 2848; 3640; 4084; 7288.

[Ex. 31—40.] Divide each of the following numbers by 5. 555; 1000; 1555; 2050; 2505; 3015; 3525; 4050; 4555; 5035.

[Ex. 41—50.] Divide each of the following numbers by 6. 666; 1206; 1980; 2646; 3366; 3786; 4272; 4884; 5520; 6426.

[Ex. 51—60.] Divide each of the following numbers by 7. 777; 7070; 1470; 2107; 2940; 3528; 4284; 4991; 5740; 6657.

[Ex. 61—70.] Divide each of the following numbers by 8. 888; 1608; 2560; 3448; 4332; 5056; 5860; 6568; 7776; 8272.

[Ex. 71—80.] Divide each of the following numbers by 9. 999; 1890; 2799; 3708; 4833; 5706; 6526; 9873; 7434; 8514.

[Ex. 81—90.] Divide each of the following numbers by 11. 1221; 2332; 3751; 4757; 5984; 6897; 8019; 9328; 10153; 12089.

[Ex. 91—100.] Divide each of the following numbers by 12. 1440; 2772; 3996; 5076; 6360; 7944; 8520; 9984; 11304; 47916.

[Ex. 101—150.] Divide 21840 by 13; by 14; 15; 16; 17; 11; 8; 18; 19; 20; 28; 26; 30; 56; 52; 104; 31; 27; 35; 21; 39; 65; 105; 195; 182; 208; 240; 12; 24; 41; 51; 61; 71; 81; 91; 33; 22; 23; 25; 29; 32; 34; 36; 37; 38; 40; 80; 160; 480; 112.

[Ex. 151—200.] Divide 19704 by 2; by 4; 6; 12; 14; 22; 3; 9; 7; 11; 18; 21; 28; 33; 36; 42; 44; 49; 63; 66; 84; 98; 99; 77; 126; 132; 308; 147; 198; 154; 13; 17; 19; 23; 29; 31; 37; 41; 39; 43; 47; 51; 53; 57; 38; 34; 46; 58; 59; 61.

[Ex. 201—250.] Divide 31752 by 2; 3; 4; 6; 7; 8; 9; 12; 14; 18; 21; 24; 27; 28; 36; 42; 49; 54; 63; 72; 81; 84; 33; 25; 41; 46; 26; 29; 17; 19; 37; 43; 45; 47; 51; 52; 53; 55; 67; 75; 108; 126; 147; 56; 162; 168; 196; 216; 252; 504.

[Ex. 251—300.] Divide 70528 by 11; 12; 14; 16; 18; 22; 24; 27; 28; 32; 33; 21; 36; 42; 44; 48; 54; 56; 63; 66; 72; 77; 84; 88; 96; 99; 108; 112; 126; 132; 144; 168; 176; 154; 189; 216.

504; 1008; 91; 39; 93; 75; 25; 87; 528; 224;
864; 378; 432; 756.

12. DECIMAL DIVISION.

[Ex. 1—25.] Divide 17.28 by 2; 4; .8; 1.6; 3.2; 64; .3; .06; .009; .12; 1.8; 24; 270; .036; 4.8; .54; .72; 960; 1.08; 1.44; 192; 216; 2.88; .432; .0576.

[Ex. 26—50.] Divide 14175 by .3; .05; .007; .0009; .15; 2.1; .025; .27; .35; 4.5; 6.3; .75; .081; 1.05; .135; 17.5; 22.5; .315; 1.89; 4.05; 5.25; 56.7; .675; 9.45; 2.025.

[Ex. 51—75.] Divide .2688 by 20; 300; 4; .6; .07; .008; 12; 1.4; .16; .21; .024; 28; 3.2; 420; 480; 56; .64; 8.4; 960; 1.12; 1.28; .0168; .192; 22.4; 8360.

[Ex. 76—100.] Divide 1.029 by 7; .03; 20; 500; .6; 100; 14; .15; 21; 3000; 3.5; 42; 4.9; 70; 1.05; .098; .147; 210; 2.94; 29.5; 10290; 514.5; 490; 1.715; 20.58.

[Ex. 101—150.] Divide .01155 by 231; .03; 50; 700; 11000; 1.05; 21; .15; 3.5; 33; 550; .77; .0165; 2; .4; .08; .016; 25; 1.25; 62.5; 32; 640; .33; 7; .007; 70; 110; 13; .17; .019; 1.8; .009; 270; .027; 23; 2.9; .31; 1000; 100; 1280; 25.6; 5.12; 1.024; 37; 390; 4.1; .43; .045; .0047; 4.9.

[Ex. 151—200.] Divide 729.3 by 11000; .011; 1300; .13; 17; .0003; 3.3; 390; .051; 14800; 1.87; .221; .0663; 4.29; 56.1; .00561; 24310.

5; .05; 500; .032; .0125; 1600; .016; 64; 625;
 6.25; 99; .07; .077; 25; 310; 17000; 150; .085;
 715; .935; 115.5; 19500; .02145; 49; 2.1; .87;
 .0019; 88; 1.04; .136; .0264; 4.08; .07293.

13. MISCELLANEOUS EXAMPLES.

1. Add	2. Add	3. Add	4. Add	5. Add
1496	27.99	1.725	.47	183.2
208	1.63	.006	.19	95.
531	.08	3.07	.0825	1.6
27	40.	2.68	.0044	24.8
600	6.5	4.019	.285	119.1
1983	19.8	.872	.163	264.
242	2.07	2.9	.2492	312.4
5537	65.44	9.28	.0009	479.5
1692	38.27	2.371	.4538	183.2
428	44.4	1.584	.2716	279.5
2365	8.	2.219	.802	16.
184	29.29	1.608	.319	830.
222	5.16	.068	.7517	24.4
9538	66.28	.086	.068	850.7
2762	31.19	4.444	.59	261.8
1140	2.84	1.5	.2755	44.4
2870	1.07	3.168	.1388	327.5
1515	65.	9.	.4	162.4
3388	38.7	2.47	.2683	98.
7516	26.19	3.131	.095	275.3
<hr/> 44244 <hr/>	<hr/>	<hr/>	<hr/>	<hr/>

§ 18.] MISCELLANEOUS EXAMPLES. 157

6. Subtract	7. Subtract	8. Subtract	9. Subtract
217850962	9417908.	48725.	3791062.49
193574480	872463.195	9716.8409	19540.872

10. Subtract 7751968321.6538219
961969215.8826919253

11. Multiply	12. Multiply	13. Multiply	14. Multiply
268438	41538.072	1573.0096	376549.09
109	205	19.8	8.07

29259742 *Ans.*

15. Multiply 515428729158.0624032
1.375

16. Divide	17. Divide	18. Divide
83)1762.91(4.7)694.268(.91)418.729(

19. Divide	20. Divide
55).017274(3.062)144.28791631515(

21. Add 268.4; 197.63; 22190; 4.087; 115.95; 287.646; .09341; 74.248; 115.375; and 7648.2193.

22. Find the difference between 57.682914 and 698.7218.

23. Multiply 3.4817 by .07219.

24. Divide three thousand by three thousandths.

25. Add	26. Add	27. Add	28. Add
4891203	319.0412	8.251	818.818
2768454	27.683	.0872	47.27
1421009	195.5	9.15833	6.1
26887	8.4109	4.285	95.38
119400	.067	1.14082	276.067
8737	2.94	.00591	529.35
28282	587.03	5.87182	427.6
1111	25.	4.58205	890.
45796	6.8725	1.98721	50.7
388088	33.19	4.256	1.95
1154990	167.283	.08374	.041
987251	519.0008	2.51962	26.53
3262580	1.7	4.245	847.2
4091637	25.49	.89038	913.59
987654	183.275	2.1619	244.324
321	6.8093	.534	99.99
8831954	47.25	.68284	8.8
2176871	195.837	2.2212	77.77
1193482	28.1909	6.531	666.666
4651987	1.943	8.47054	428.53
324156	372.5	6.193	197.4
419687	500.27	.87218	258.
2516375	33.659	5.3062	69.1
1918171	275.	8.7593	8.82
564107	98.3202	4.26085	21.735
2831598	515.4	3.17953	984.048
4433272	827.1154	8.7291	.009

29. Add	30. Add	31. Add
5527.093816	31.80462795	5.196882755
2483.197544	4.725983	2.84521833
1962.842115	16.0544272	1.9546821
4874.315962	59.3825	4.764841
5157.376208	84.19354968	.0082756
4832.516519	.00775	.00042934
4842.623792	.091243	.000051525
5125.684037	4.2008766	3.68419533
8037.157885	41.21593872	4.1926088
7516.802456	8.30908057	.027319
4472.906184	.0000883	2.741683257

32. The amount of anthracite coal mined in Pennsylvania in 1830, was 174734 tons; in 1840, 865414 tons.* What was the increase in the ten years?

33. Find the total population of the kingdom of Great Britain and Ireland, according to the census of 1841, the population of England and Wales being 15,901,981; Scotland, 2,624,586; Ireland, 8,205,382; Guernsey, Jersey, and Man, 124,079.*

34. The British national debt in 1847, amounted to 764,608,284 pounds sterling. To how many dollars is this sum equivalent, the pound sterling being worth 4.84 dollars?

35. George Washington was born A. D. 1732. He was elected President when 57 years old, and died in 10 years afterwards. In what year did he die?

* Murray's Enc. of Geography, Amer. Ed.

36. A merchant buys 169 barrels of flour for \$827.63; 218 barrels for \$911.27; 98 barrels for \$465, and 117 barrels for \$640.00. How many barrels did he buy, and how much did he give for the whole?

37. 12 inches make one foot, and 3 feet make one yard. How many inches are there in 1 yard? In 16.25 yards?

38. 112 pounds make a hundred-weight. What will 4.35 hundred-weight of sugar cost, at 8 cents a pound?

39. If a carriage-wheel is one rod in circumference, how often will it turn round in going 1 mile, or 320 rods? In 16.4 miles?

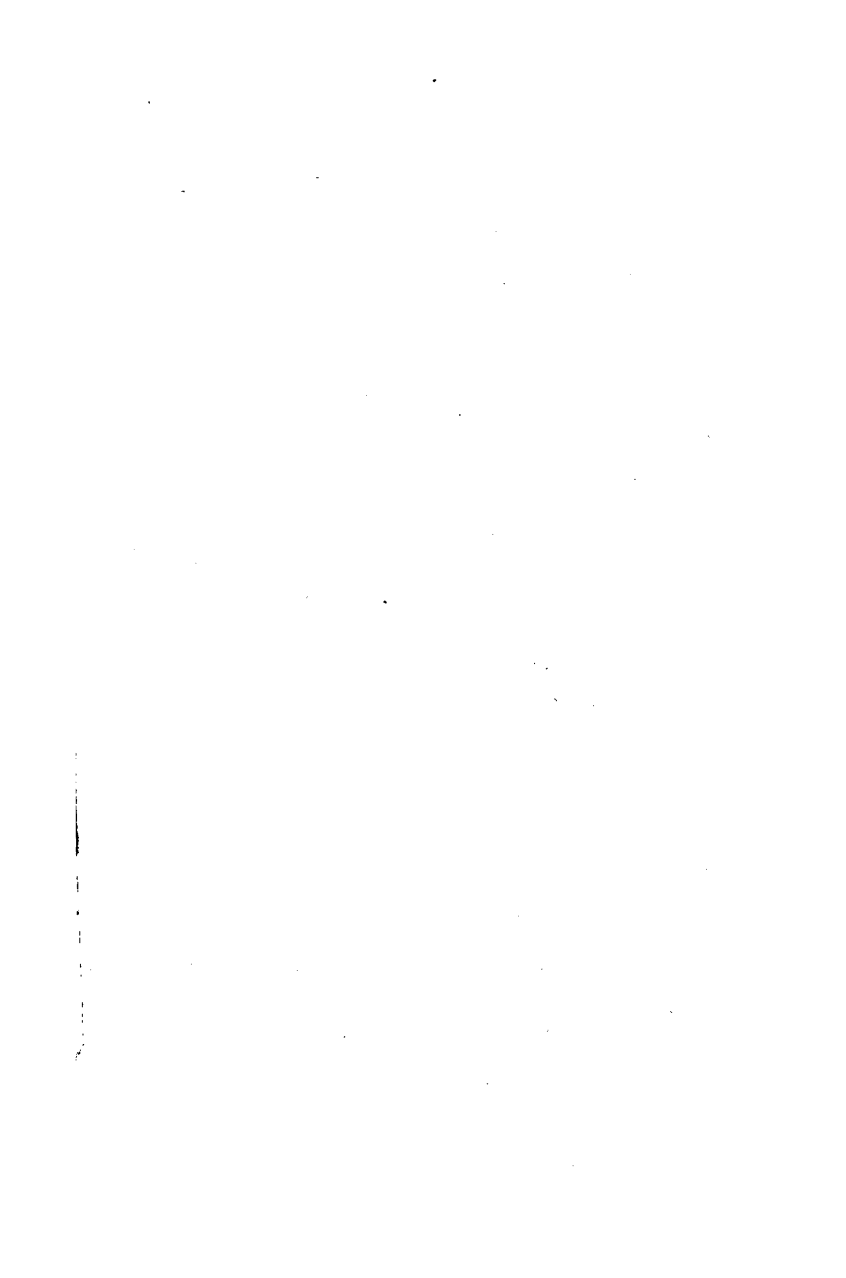
40. A clock strikes 4680 times in 30 days. How many times does it strike in 1 day?

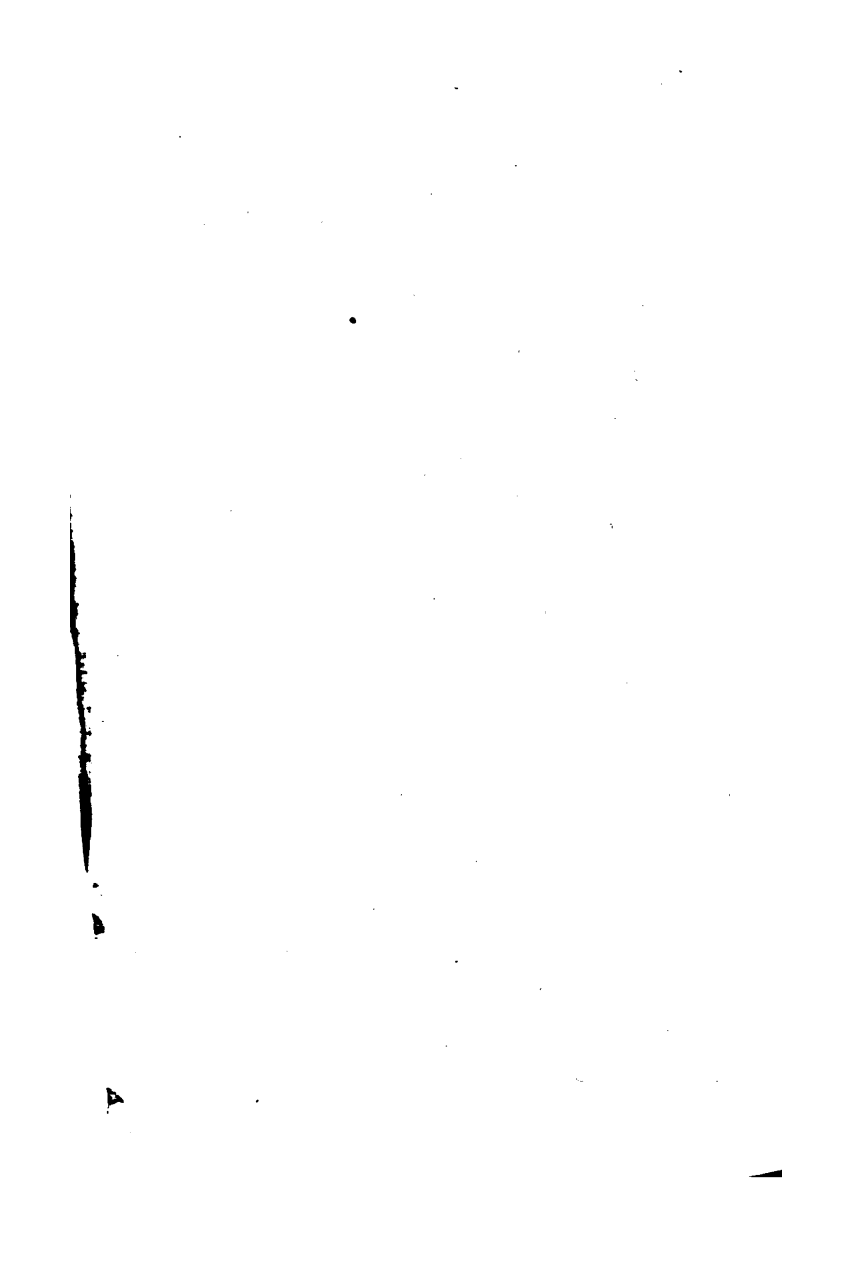
41. A. contributed 400 dollars in a speculation, B. 800 dollars, and C. 200 dollars. How should they divide the gain, which was 90 dollars?

42. A. and B. together can build a boat in 8 days, and with the assistance of C. they can do it in 5 days; how much of it can A. and B. build in 1 day? How much of it can A., B., and C. build in 1 day? How much of it can C. build alone in 1 day? How long would it take C. to build it alone?

43. What number is that, to which if its third and its fourth are added, the sum will be 247?









HSMT

